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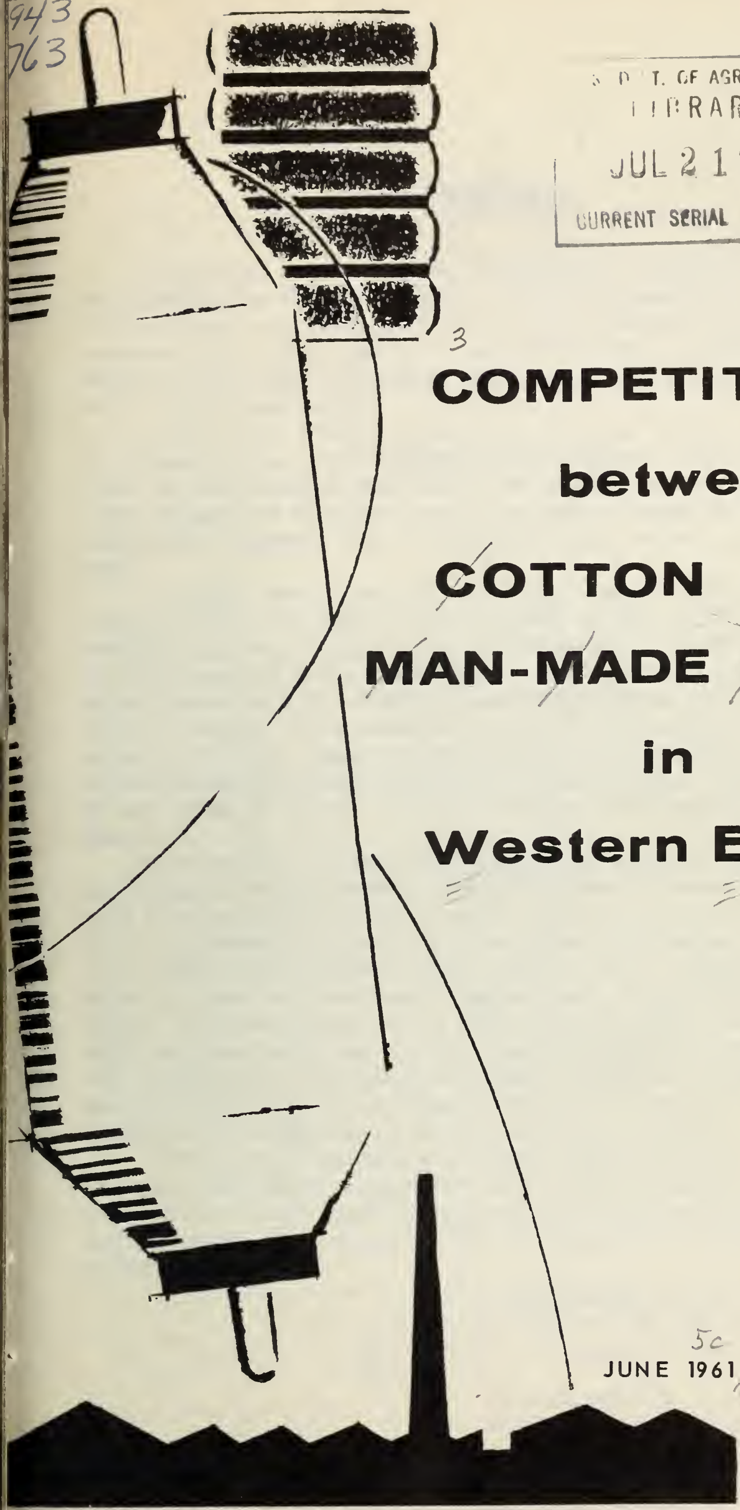

COMPETITION between COTTON and MAN-MADE FIBERS in Western Europe

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Preface

The cotton economy of the southeastern United States was born and nurtured on exports to Europe. Later, cotton culture spread into the southwest and west, and U.S. cotton interests remained keenly aware of their large stake in export markets. Over the years, this stake has changed in relative importance; nonetheless exports are still of vital significance.

In the years 1955 through 1959, the value of cotton exports was 17 percent of the value of all agricultural exports and 4 percent of the value of all products exported from the United States; the value of cotton exports to Western Europe was 19 percent of the value of total agricultural exports and 8 percent of all products exported to that area.

A little more than 30 years ago, export markets took 7-1/2 million bales, or more than one-half of the cotton grown in this country; just over 20 years ago, 5 million bales, or about 4 bales out of 10 harvested, were sold abroad; now about 1 in every 3 bales of cotton grown in this country is sold to foreign buyers. Shipments to Western Europe have changed in relative importance to total U.S. exports since the close of World War II. In the 1934-38 period, 61 percent of all cotton exported by this country went to Western Europe; in the 1954-58 period, only half of total U.S. exports was shipped there.

U.S. cotton interests are not content to see this trend continued; nor is there evidence that it cannot be slowed or reversed. Much has been done and is being done to recover the ground lost in recent years. There is considerable evidence that when it is competitively priced, U.S. cotton has generally been preferred by Western European spinners, who have learned to depend upon its practically unlimited supply, the availability of a full range of grades and staples, the uniformly good spinning qualities, and reliability of service from the U.S. cotton trade. The erosion of cotton's markets in Western Europe may have reached its peak, and numerous favorable factors seem to be forthcoming to improve cotton's competitive position.

In this report an attempt has been made to set forth some of the aspects of interfiber competition in the Western European market, to indicate the trends, to evaluate the adjustments that are taking place, and to assess their impact on the consumption of cotton in Western Europe.

R.C. Sherman
Director, Cotton Division

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Competition Between Cotton and Man-made Fibers in Western Europe

~~By~~ Bernice M. Hornbeck
Cotton Division

Summary

There has been a quiet revolution involving Western Europe's[1] textile industries in the past 20 years, which has affected the U.S. market for raw cotton in that area. The combined effect of many changing factors has resulted in the reduction of raw cotton exports from the United States, both in actual quantity and in relative importance to Western Europe's total imports and consumption of raw cotton. Cotton from all sources has also shown a tendency in postwar years of supplying a declining percentage of the textile fiber needs of Western Europe, as made-man textile fibers have gained an increasing share of the total fiber market. The use of rayon staple on the cotton spinning systems of Western Europe has accounted for a substantial part of this replacement but, in recent years, the newer types of man-made fibers have also made inroads into end-uses that have been traditionally supplied by natural fibers.

Western Europe is the world's largest import market for cotton. It is an area that has been an important customer for U.S. cotton for well over a century and to which about half of the exports of raw cotton from the United States are sent.

Western Europe's imports of raw cotton from all sources averaged over 7.9 million bales in the 1934-38 period but since that time have been considerably less. In the early postwar period, they averaged 6.7 million bales annually, and in the last 5 years, 7.1 million bales. The postwar drop in cotton imports has been caused mainly by three factors: (1) Increased production of cotton on the European continent, (2) increased use of man-made fibers, and (3) changed patterns of international trade in cotton textiles.

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[1] Unless otherwise indicated, the term "Western Europe" in this report includes the following countries: Austria, Belgium, Denmark, Finland, France, West Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and Yugoslavia.

U.S. exports of cotton to Western Europe have dropped from a prewar average of 3.4 million bales, or 43 percent of total cotton imports, to an average in the past 5 years of 2.8 million bales, or 39 percent of the smaller total cotton import market. This shift to other sources has occurred in part because of increased availabilities from those sources and in part because of balance of payment considerations in the early postwar years. In 2 of the past 5 years, some of this shift occurred because of the differential between the price of U.S. and other cottons.

Some of the ground lost by cotton in the postwar years was the result of sharply increased prices at which it was being offered on world markets, which encouraged the expansion of man-made fiber production facilities. Unfortunately, these relatively high prices came at a time when other conditions existed that also worked to cotton's disadvantage.

The production of man-made fibers prior to World War II was concentrated mainly in Germany and Italy, where these textile fibers manufactured from cellulose were clearly thought of as a substitute for natural fibers. In the postwar period, man-made fiber production spread and expanded to all major textile producing countries in Europe, and new man-made fibers were created that provided additional competition for natural fibers. These industries benefited from government assistance in many forms and from the natural advantage of requiring, for the most part, raw materials available indigenously or from non-dollar sources. Impetus was probably given to expansion programs by the supply and price problems associated with cotton in the years 1950 and 1951. Under these circumstances, the production of man-made fibers in Western Europe rose from a prewar average of 707.8 million pounds annually to an estimated 2.8 billion pounds in 1960, equivalent to about 6.5 million bales of cotton.

Costs for the production of rayon staple vary, but there is reason to believe that they ranged from 20 to 23 cents per pound in most Western European countries under conditions existing in 1958 and 1959. These low costs have formed the basis for domestic prices that since the early postwar period have been low in relation to cotton prices. Man-made fiber producers seem to maintain a price spread between cotton and rayon staple in order to encourage rayon staple's use; they also preserve price stability insofar as possible.

Outside of Western Europe, sales of rayon staple are made at very competitive prices, since it is of utmost importance that producers dispose of the quantities that are excess to their domestic needs in order to operate plants at a level close to capacity and thereby keep unit costs low. It is believed, however, that producers selling into each other's markets within the European area have generally agreed not to reduce prices beyond the home market prices established by the national producers in order to prevent ruinous price competition.

When mill waste in taken into consideration, the cost advantage of rayon staple over cotton is greater than a direct price comparison would indicate, but lower selling prices sometimes obtained for rayon products may lessen, or eliminate, this apparent cost advantage. The quality characteristics of cotton are preferred by consumers for many end-products, and consumers are frequently willing to pay the price differential for cotton products. Spun rayon and cotton-rayon blended products are purchased in some markets of Western Europe, however, because the consumer is unaware of the fiber content of the article purchased, or because of their lower retail prices.

A substantial expansion of per capita consumption has taken place in the domestic markets of Western Europe, but as late as 1957, there continued to be a wide range between the highest per capita consumption of 25.8 pounds in the United Kingdom and the lowest of about 10 pounds per person in the Mediterranean countries. Compared to the prewar period, these national per capita differences have narrowed. Furthermore, the composition of the total fiber pattern has changed considerably. Whereas in 1938 cotton represented almost 60 percent of all fibers consumed domestically, its share dropped to 54 percent by the year 1957; on the other hand, man-made fibers increased their share from 19 percent to 28 percent. All Western European countries except Germany and Italy, which before World War II were heavy users of rayon, increased their actual and relative consumption of man-made fibers in the postwar period.

In a number of countries, cotton seems to be staging a comeback, especially since 1957. While it is impossible to establish a measurable relationship between increases in cotton consumption and the causes, the following factors have undoubtly played important roles: (1) Higher levels of living in all countries, resulting in increased consumer demand for textile products of all types; (2) cotton promotion programs drawing upon information developed from market research surveys, dramatizing the use of cotton as a fashion fabric and capitalizing on cotton's inherent characteristics; (3) improvement of cotton's end-use qualities with special finishes, particularly shrinkage control and easy-care finishes; (4) lower cotton prices that seemed to narrow the spread between cotton and rayon staple and thereby remove some of the incentive for spinners to use rayon staple as a substitute for cotton; and (5) complete liberation of cotton imports in most countries.

Further increases in total cotton consumption in Western Europe can be expected, and it is also possible that cotton will continue the trend toward a larger share of the total fiber market that has been evident since 1957. In order to achieve these objectives, however, it is important that cotton be priced competitively in relation to rayon staple, that cotton promotion be continued, and that research be continued at all levels of the industry beginning with the plant breeder.

Cotton Textile Industry of Western Europe

The textile industries of Western Europe are basic to the needs of the people, to the economies of the individual countries, and to the area as a whole. The most recent data available for the majority of the textile producing countries of Western Europe, although several years old, indicate that 5 million people, or nearly 20 percent of the total labor force employed in manufacturing, were employed in textile and closely related industries. Of these, some 3 million were employed in spinning and weaving and the remaining 2 million in the knitting, clothing, and other allied fields. In most countries, the textile industry was the largest industrial group, and the "value added by manufacturing" by the textile and clothing industries is estimated to have accounted for about 14 percent of the total value added in all manufacturing and mining. The textile industry is also important from the standpoint of consumer expenditures. About 12 to 13 percent of total private consumption expenditures is for clothing. This does not include the additional expenditures for household textiles and textiles incorporated into various forms of other industrial articles.

The cotton textile industry is by far the most important sector of the textile industry in every country of Western Europe, consuming--in the aggregate--about 60 percent of the total raw materials used by the textile industries of Western Europe. As of the beginning of 1960, the countries of Western Europe had collectively almost 41 million cotton spinning spindles and 800,000 looms, amounting to 31 and 30 percent of the world's total of spindles and looms (table 1). In 1959, this equipment produced 3,231 million pounds of yarn and 2,437 million pounds of woven fabric, representing 18 and 19 percent of the world totals. Large quantities of knit goods, narrow fabrics, and other specialty items are also produced.

With the increased industrial activity in Western Europe that followed the close of World War II, it was possible for the industry, with assistance from governments and trade associations in various countries, to embark upon modernization programs which had long been recognized as desirable to the efficiency of the industry. Several countries not only modernized but also scrapped equipment that had gradually become redundant as the result of shrinking export markets brought about by the expansion of established and the rise of new cotton textile industries outside of Europe, particularly in Asia.

As a result of these programs, considerable progress was made after World War II in overcoming some of the disadvantages under which the cotton textile industry had labored. In 1948, government subsidies were granted in the United Kingdom for modernizing equipment and consolidating mills into more economic units. In 1954, a trade association fund was instituted in France to facilitate the scrapping of old equipment. It was estimated by a group of experts that, even after these measures, the average age of machinery in Europe was probably between 20 or 25 years, with the equipment in Germany and Italy being even older. Productivity in Western Europe as a whole is far below that of Japan and the United States, not only because of the comparative age and inefficiency of the productive equipment, but also because the equipment is not as fully utilized. However, with the modernization programs has come a greater tendency to add a second or third shift. In 1959, the Cotton Industry Act of the United Kingdom in a further effort to cope with this problem provided about $84 million for a 5-year period to assist the industry in reducing excess production capacity and installing

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[2] *The Future of the European Cotton Industry,* report by a group of experts, published by the Organization for European Economic Cooperation (OEEC), July 1957.

Table 1.—Cotton textile industry: Equipment and production of Western Europe, 1959

Country	Equipment		Production	
	Spindles[1]	Looms[2]	Yarn	Fabric
	Thousands	Thousands	Million pounds	Million pounds
Austria	579	12	[3]55.7	38.4
Belgium	1,521	33	204.2	164.7
Denmark	96	2	17.0	14.8
Finland	297	6	38.4	26.9
France	6,071	120	522.5	[4]452.4
Germany, West	5,948	120	[4]717.9	[5]580.3
Greece	320	8	51.2	(6)
Ireland	(6)	2	(6)	4.7
Italy	4,854	103	383.3	265.4
Netherlands	1,031	35	155.5	[7]139.5
Norway	99	2	10.6	10.5
Portugal	1,089	32	84.9	62.7
Spain	2,626	69	158.9	[8]101.4
Sweden	423	8	55.9	48.4
Switzerland	1,195	16	[8]65.0	[9]42.5
United Kingdom	14,104	216	606.2	417.7
Yugoslavia	[10]404	[10]16	103.5	67.1
Total above countries	40,657	800	3,230.7	2,437.4
Total world	129,531	2,633	18,298.2	12,786.7

[1] In place on 31st of December, 1959.

[2] In place on 1st of January, 1960.

[3] Includes waste.

[4] Includes mixtures.

[5] Production equals consumption of cotton yarn (including mixtures, waste yarn, and coarse yarn) in weaving mills, minus 5 percent assumed manufacturing waste.

[6] Not available.

[7] Equals yarn consumption in licensed mills.

[8] Partly estimated.

[9] Yarn comsumption.

[10] Estimated.

Source: Equipment, International Cotton Industry Statistics, Volume 2, 1959; production, International Cotton Advisory Committee Bulletin, December 1960.

modern, efficient machinery. By the end of March 1960, the cotton industry in the United Kingdom had scrapped about one-half of its spinning spindles, a third of its doubling spindles, and two-fifths of its looms. The reduction in effective capacity is not as great as these figures might imply because a great deal of the machinery that was scrapped was idle before the scheme came into effect and because more than three-fourths of the spindles scrapped were the slow-spinning mule type. As a consequence of these and other adjustments, the total number of spindles in the countries of Western Europe is now less than the average number in the United Kingdom alone during the years 1934-38. Europe's share of the world's spindles had declined to less than one-third by the end of 1959, and this proportion will continue to decline as textile production facilities expand in presently underdeveloped countries. The reduced number of spindles and looms, however, may actually not result in decreased output for the industry in Western Europe because of (1) increased efficiency with the elimination of marginal equipment and producers, and (2) a higher incidence of two-and three-shift working.

The domestic markets of the individual countries of Western Europe are the largest outlet for the products of their cotton textile industries. In 1959 they absorbed about 89 percent (by weight) of the cotton fabrics produced in the area; of this, 8 percent was exported to Western European countries other than the country of production. Exports to non-Western European destinations averaged 11 percent of total production. The importance of the export market varies greatly between countries, some of which import grey goods for processing and re-export, and others of which export only goods of their own production. Expressed as a percentage of their cotton textile production, the various countries exported as follows in 1959: The Netherlands, 48 percent; Portugal, 43 percent; Switzerland, 36 percent; Belgium, 35 percent; the United Kingdom and France, 23 percent; Austria, 18 percent; and Spain, 16 percent. Denmark, West Germany, Greece, Italy, Norway, Sweden, and Yugoslavia all exported less than 10 percent of their total cloth production.

Of the 4,206 million pounds of raw materials consumed in cotton spinning mills in 14 of the major producing countries of Western Europe in 1959, over 80 percent was cotton, about 14 percent was man-made fibers, and nearly 6 percent was other fibers, including cotton mill waste. There is considerable variation in the fiber consumption patterns between countries. In that year almost 98 percent of the raw materials consumed by cotton spinners in Denmark and Switzerland was cotton, but only 48 percent in Norway, with the remainder of the countries ranging between these two extremes (table 2).

With exception of 500,000 to 640,000 bales grown in Greece, Italy, Spain, and Yugoslavia--almost all of which is used within the country producing it or exported to European destinations--the raw cotton used by the cotton spinning industry of Western Europe must be imported from outside the area. The cotton producing areas in Africa associated with Great Britain, France, Belgium, and Portugal supply some of these requirements, but the largest single supplier has traditionally been the United States. On the other hand, man-made fibers, the other major raw material for the cotton spinning industries of Western Europe, are produced in superabundance on the European continent.

The cotton industries of Western Europe are assured of a continuing major role in the future as they share in the expanding domestic market foreseen from increased national populations and higher levels of living. This conclusion is borne out by many studies made by national and international groups and seems to be substantiated also by the increased efforts that are currently directed to the correction of many of the old problems with which the cotton

Table 2.--Consumption of raw materials by the cotton spinning mills in Western Europe, 1959[1]

Country	Total fiber				Percent of fiber		
	Cotton	Man-made	Other[2]	Total	Cotton	Man-made	Other[2]
	Million pounds	Million pounds	Million pounds	Million pounds	Percent	Percent	Percent
Austria	55.0	37.7	5.9	98.6	55.8	38.2	6.0
Belgium	200.5	16.1	48.5	265.1	75.6	6.1	18.3
Denmark	18.3	.4	(3)	18.7	97.9	2.1	(3)
Finland	36.0	4.0	.3	40.3	89.3	9.9	.8
France	578.4	64.0	19.1	661.5	87.4	9.7	2.9
Germany, West	670.2	189.4	101.7	961.3	69.7	19.7	10.6
Greece	56.7	4.1	.5	61.3	92.5	6.7	.8
Italy	444.9	75.9	25.3	546.1	81.5	13.9	4.6
Netherlands	160.8	10.8	12.1	183.7	87.5	5.9	6.6
Norway	10.0	10.6	(3)	20.6	48.5	51.5	(3)
Portugal	104.1	12.8	--	116.9	89.1	10.9	--
Spain	187.3	31.3	13.8	232.4	80.6	13.5	5.9
Sweden	61.4	1.9	1.5	64.8	94.8	2.9	2.3
Switzerland	76.0	1.3	.5	77.8	97.7	1.7	.6
United Kingdom	622.8	118.7	(3)	741.5	84.0	16.0	(3)
Yugoslavia	94.2	21.0	(3)	115.2	81.8	18.2	(3)
Total	3,376.6	600.0	229.2	4,205.8	80.3	14.3	5.4

[1] 2-, 3-, and 4-cylinder spinning mills. In Europe the terms 2-, 3-, and 4-cylinder spinning are generally defined as follows: 2-cylinder yarns (also called 2-roller yarns and vigogne yarns) are cotton yarns of counts about equal to 3's to 11's, made principally of cotton waste and other waste material, with relatively small percentages of raw cotton, although yarns predominantly of rough short staple cotton are also produced on 2-cylinder draw frames. In international statistics, 2-cylinder spinning is often referred to as "cotton waste spinning" or "condenser spinning". 3- and 4-cylinder spinning is roughly equivalent to medium and fine cotton yarn spinning.

[2] Other fibers, including purchased waste.

[3] Not available.

Source: European Cotton Industry Statistics, v. 3, No. 1, International Federation of Cotton and Allied Textile Industries.

textile industries have been faced. The continued importance of the cotton textile industry of Western Europe is of major significance to the cotton interests in the United States. Collectively, these countries represent the largest import market for cotton, but an area where competition from man-made fibers has been, and will continue to be, important.

Cotton Imports

Factors Affecting Volume and Source

There have been changes in the kinds, sources, and volume of raw materials for Western Europe's[3] cotton textile industry since the close of World War II. The reasons for this are manifold, but several are of overriding importance: (1) Declining cotton textile exports; (2) increased textile imports; (3) increased use of man-made fibers in the cotton spinning industry; (4) the acute shortage of foreign exchange that followed the close of hostilities; (5) the fivefold increase in the combined cotton production of Greece, Italy, Spain, and Yugoslavia; and (6) expanded production and export of cotton in many other countries.

None of these situations taken alone is particularly drastic; however, their combined effect has caused a substantial change in the trade patterns for raw cotton and a reduction in total cotton imports by Western Europe. These imports averaged annually about 800,000 bales less in 1955-59 than in the prewar period. For example, in 1934-38, Western Europe imported an average of 7.9 million bales of cotton annually, but only 6.7 million bales in 1950-54, and 7.1 million bales in the years 1955-59. At the same time, cotton production in Western European countries rose from a prewar average of 96,000 bales annually to 234,000 bales in 1950-54, and to 529,000 bales in 1955-59. Most of this production is in Greece and Spain. Greece consumes about one-third to one-half of the cotton it produces, and the remainder is exported largely to destinations in Western Europe. Spain consumes all of the cotton produced within the country. The quantities of cotton produced in neither Greece nor Spain are large in comparison with production, or exports, from the United States, but these quantities affect the exports of U.S. cotton to Western Europe.

At the same time, the changed trade pattern in cotton textiles also affected raw cotton imports. Exports of cotton products of all kinds, including intra-European trade, dropped from 1,045 million pounds in 1938 to 705 million pounds in 1948 and then to 648 million pounds in 1958 but recovered sharply in 1959 and 1960. Imports, including intra-European trade, climbed from 304 million pounds in 1938 to an estimated all time high of 751 million pounds in 1960.

An important competitor for cotton's markets has been the man-made fibers produced by Western European industries. It is estimated

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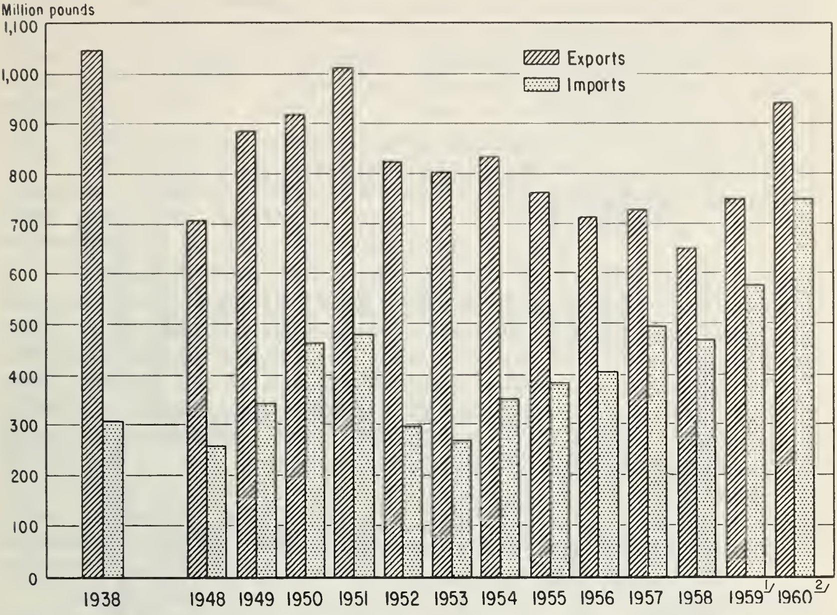
[3] In addition to the countries listed on page 1, Western Europe in the 1934-38 period included all of prewar Germany; the postwar figures for Western Europe exclude that area of prewar Germany now called East Germany, which consumes about 400,000 bales of raw cotton annually, and other parts of prewar Germany now claimed by Poland and the USSR.

Western Europe's Foreign Trade in Cotton Products , 1938, 1948-1960



1/ Estimated
2/ Annual rate estimated on basis of first six months

that of the average of 821 million pounds of rayon staple consumed annually in Western Europe since 1950, approximately half, or the equivalent of about 1 million bales of cotton annually, has been used in the cotton spinning industry. In some countries the quantity is considerably more than half; for instance, in France and West Germany it was 68 and 75 percent, respectively, in the year 1958. The estimate that the cotton spinning industries use one-half of the rayon staple consumed in Western Europe may be conservative if the situation in other countries resembles that in France and West Germany, rather than in the United Kingdom where 54 percent of the rayon staple was consumed in the cotton spinning industry in 1958.

About 38 percent of Western Europe's postwar imports of cotton has come from the United States, compared with the prewar average of about 43 percent. During the crop year 1955, however, when the world price of cotton fell materially below the support level in the United States and a price spread of 5 to 6 cents developed, selling U.S. cotton in world markets was extremely difficult. In that crop year, the U.S. share of the Western European market dropped to a peacetime low of 13 percent of total Western European imports.

The remainder of imported cotton has come mostly from non-European sources (table 3). The four cotton consuming countries supplied to a significant degree by their related overseas territories are Belgium, France, the United Kingdom, and particularly Portugal. Although the present bonds between "colonies"

Table 3.--Cotton: Total imports, and imports from the United States into Western Europe, crop years, averages 1934-38, 1950-54, and 1955-59

Country	Total			From United States			Other		
	Average 1934-38	Average 1950-54	Average 1955-59	Average 1934-38	Average 1950-54	Average 1955-59	Average 1934-38	Average 1950-54	Average 1955-59
	1,000 bales [1]	1,000 bales [1]	1,000 bales [1]	1,000 bales [1]	1,000 bales [1]	1,000 bales [1]	1,000 bales [1]	1,000 bales [1]	1,000 bales [1]
Austria	[2]167	88	115	[2]94	44	57	[2]73	44	58
Belgium	[2]506	436	423	[2]145	153	159	[2]361	283	264
Denmark	[2]40	44	39	[2]36	30	20	[2]4	14	19
Finland	63	61	73	[2]48	12	24	[2]15	49	49
France	[2]1,218	1,233	1,315	606	448	379	612	785	936
Germany, West	[3]1,175	1,074	1,448	[3]301	398	496	[3]874	676	952
Greece	[2]18	7	10	[2]5	[4]4	7	[2]13	3	3
Ireland	- -	9	18	- -	4	8	- -	5	10
Italy	704	805	867	416	403	426	288	402	441
Netherlands	[2]221	298	349	[2]93	125	101	[2]128	173	248
Norway	[2]15	22	21	[2]13	20	15	[2]2	2	6
Portugal	[2]115	183	217	[2]46	7	29	[2]69	176	188
Spain	[2] [5]452	328	252	[2]276	186	175	[2]176	142	77
Sweden	[2]150	136	128	[2]117	60	85	[2]33	76	43
Switzerland	134	167	187	33	48	63	101	119	124
United Kingdom . . .	2,850	1,666	1,443	1,108	466	607	1,742	1,200	836
Yugoslavia	[2]78	[4]138	[6]183	[2]50	[4]83	[6]123	[2]28	[4]55	[6]60
Total	7,906	6,695	7,088	3,387	2,491	2,774	4,519	4,204	4,314

[1] 500 pound bales. [2] Calendar years. [3] All Germany. [4] Some years not on a crop-year basis. [5] 2-year average.
[6] Fiscal year, July-June.

and "homelands" are changed from the relationships previously existing, the movement of cotton from colony to homeland continues. Portugal usually obtains from 80 to 90 percent of its cotton imports, France about 15 percent, and the United Kingdom, 15 to 20 percent, from their respective overseas areas that are located chiefly in Africa. Between 15 and 18 percent of Belgium's total cotton imports were obtained from the Republic of the Congo prior to its independence. Another factor in the relative loss sustained by American cotton in Western Europe has been the competition from other producing countries, some of them unknown or relatively unimportant in world cotton trade prior to 1950.

Various devices and arrangements insure this flow of cotton. Business connections that have grown up through the years are often enhanced by favored trading arrangements between the colonial and European areas. Regulations governing the sale of cotton in some areas, notably the French and Portuguese African territories, make it difficult -- almost impossible -- to sell to countries other than the homeland. Moreover, raw cotton grown in Africa sometimes enters the mother country at guaranteed prices that may be either below or above world prices for cotton. Price supports, research funds, and other production stimulants are usually available to the colonial producers from the related European governments, either directly or by grants made through the colonial governments.

The African producing countries depend to a varying measure upon their homelands as markets for their cotton. For example, in postwar years, Portugal customarily has received practically all cotton produced in Mozambique and Angola; France has received about 90 percent of the French African areas total cotton exports; and Belgium, on the other hand, has received only about one-third of the Congo's exports. The United Kingdom has taken quantities varying from less than 20 percent to over 40 percent of the exports of the territories in Africa associated with the United Kingdom, but all of the small amount of Sea Island cotton produced in the British areas in the West Indies.

Bilateral trade arrangements, used to keep in balance the trade between two countries and to encourage trade in the items most important to them, also determine to some extent the source of cotton for Western European spinners. Some European governments have found it necessary, or simply advantageous, to include raw cotton in these trade protocols, not only as a means of obtaining cotton but in order to find markets for their exportable items in cotton-growing countries. The quantity of cotton specified in these trade agreements is not necessarily the quantity actually delivered, although in some cases actual performance reflects the target figure.

France, in view of its incessant financial problems since the close of World War II, has used the bilateral device to obtain raw cotton from a number of producing countries. For a number of years, France has had agreements with the USSR, Pakistan, Greece, Brazil, and Iran. These countries have supplied from one-fourth to one-third of France's total supply of raw cotton. Under the provisions of bilateral trade agreements, the USSR has supplied Finland with over 60 percent of Finland's total cotton imports since the crop year 1953-

54. Also under the provisions of a bilateral trade agreement with the USSR, West Germany agreed to receive quantities of cotton equivalent to 46,000 bales in 1958; 64,000 bales in 1959; and 69,000 in 1960. While this amounts to under 5 percent of Germany's total imports, the steady increase of the specified amounts is evident. Austria too has had bilateral trade agreements with the USSR that represented in recent years about 15 percent of Austria's total supply of raw cotton.

Other special trading arrangements also involve the movement of raw cotton into Western European countries. France has been able to buy cotton in the Northern Region of the United Arab Republic (Syria), paid for in nonconvertible francs, to the extent of about 100,000 bales in the three crop years beginning with 1956-57. Barter arrangements with Turkey provided between 50,000 and 100,000 bales, respectively, in the years 1955 and 1956, but recently these have assumed lesser importance. Spain, in an effort to obtain cotton on world markets while disposing of its wheat crop, operated under an agreement with the United Arab Republic under which Spain obtained 28,300 bales of cotton from the Southern Region (Egypt) in the crop year 1957-58. A second agreement for the crop year 1958-59 covered about 105,000 bales, about half from the Southern Region and about half from the Northern Region.

A government-issued import license or foreign exchange certificate or both are the instruments used to insure that cotton mills of Western Europe use supplies available within the overseas territories insofar as their government policy dictates, or buy cotton from countries with which their government maintains a trading protocol. It is possible by the use of these documents to direct and control both the volume and source of the purchases of cotton and other imported products. For example, prior to January 1, 1959, at which time imports of cotton into France were liberalized, raw cotton imports were subject to import licenses. In the issuance of these licenses, first priority was given to imports from the French franc areas, second priority to imports from bilateral trade agreement countries, and third from other cotton exporting countries, including the United States.

As of 1960, after a wave of liberalization moves which would seem to mollify the effects of bilateral trade agreements, only four countries of Western Europe (Spain, Portugal, Finland, and Yugoslavia) continue to have regulations governing cotton imports that affect the quantities that may be imported from the United States. Austria, West Germany, and the Netherlands continue to issue permits to implement the volume of cotton imports specified in trade agreements with certain producing countries. Import licenses are required for imports into Finland, France, Norway (for some source countries), and Sweden but presumably for statistical purposes only.

Postwar U.S. Government Programs

Following the cessation of hostilities in Europe in 1945, the national resources of most Western European countries were subject to severe strain and dislocation as these countries moved toward a peacetime economy. The United Nations Relief and Rehabilitation Administration and the United States Army Civilian Relief programs made possible the acquisition of consumer and producer goods, including cotton, that were so urgently needed in this reconstruction period. Although economic activity in Western Europe as a whole largely recovered from wartime ravages around 1950, individual countries continued thereafter to have serious economic problems, particularly those related to balance of payments with dollar accounts.

The Marshall Plan and subsequent U.S. Government programs aided European countries to maintain a continuous flow of essential U.S. goods despite their limited amounts of earned dollar exchange. Cotton, the raw material for a basic industry, was considered by the European governments, as well as by the United States, to be of major importance for inclusion under these programs. Under these programs, dollar exchange to be used for the purchase of cotton and other commodities was made available to European governments. Individual mills continued to make purchases in their local currency at world prices but were able by this means to obtain U.S. cotton in a volume that would not have otherwise been possible. While it is undoubtedly true that some cotton from the United States would have moved into Western Europe at this time without these plans, their operation permitted a more normal transition of European industries into full production during a lengthy period of serious dollar scarcity.

In the fiscal years 1948-49 and 1949-50, more than three-fourths of the U.S. cotton moving into Western Europe was shipped under the Marshall Plan, which was particularly important for Austria, Denmark, France, Western Germany, Greece, Italy, the Netherlands, and the United Kingdom in the financing of their cotton imports.

Export-Import Bank loans also provided the means to finance cotton purchases under terms more favorable than usual commercial credit arrangements, although these loans were, of course, repayable in dollars. The Agricultural Trade and Development Act of 1954, popularly known as Public Law 480, provided some Western European and other governments an opportunity to obtain U.S. cotton without dollar outlay, after meeting "usual marketing" requirements. Public Law 480 also provided for using some of the "local currency" generated by the sale of certain agricultural commodities to finance market development programs that are discussed in greater detail later in this report.

The price of U.S. cotton, which had become seriously out of line with world prices in the crop year 1955-56, was restored to world price levels by the export sales programs of the Commodity Credit Corporation beginning in 1956. This action came at a time when export availabilities from other cotton growing countries were limited, compared to the amounts available a year earlier. The continued strong demand for cotton textiles and the competitive price of U.S. cotton were largely responsible for the recovery of U.S. cotton's position in Western Europe from the peacetime low of 13 percent in the crop year 1955-56 to 58 percent the following year.

Without these U.S. Government programs, some countries of Western Europe would have had a difficult time in financing the purchase of U.S. cotton. Probably without them, there would also have been increased pressure on the supplies of cotton available from sources outside the United States, resulting in higher cotton prices and further inducement for the use of man-made fibers by the mills in Western Europe. It is likely, also, that these programs permitted a higher level of textile production than would have otherwise been possible, and thus contributed to the economic recovery of Western Europe.

In the postwar era, the U.S. Government also continued a vast amount of technological research related to cotton breeding, testing, utilization, and the improvement of the end-use qualities of cotton goods, which has benefited spinners in Western Europe and elsewhere.

As a result of the major steps taken in the last couple of years by Western European governments to increase currency convertibility and relax or eliminate trade restrictions, cotton mills in those countries are confronted with fewer impediments to the importation of raw cotton than at any time since the middle 1930's. As a consequence, competitive conditions governing the sale and purchase of the various growths of cotton such as have not existed for two decades have now emerged.

The effects on cotton of the formation of the European Economic Community and the European Free Trade Associations are yet to be determined. Such trading blocs, since they are composed of heavily industrialized nations, may come to have an important impact upon the volume and sources of cotton imported by these areas.

Rise of Man-Made Fiber Industries[4]

Industrial production of textile fibers began with filament-type yarns around 1900 in France. Prior to World War I, man-made fibers were produced in Belgium, France, Germany, and the United Kingdom, as well as in the United States. At prices of about one-third to one-half those of silk and several times those

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[4] In view of the fact that there is at present no universally adopted nomenclature for fiber products produced industrially, it seems necessary to explain the terminology used in this report. The term generally adopted throughout the industry in the United States to describe all industrially produced fibers is "man-made fibers". This term has come into general usage only within the past few years. In the United States, man-made fibers are grouped into cellulosic (viscose, cuprammonium and acetate), noncellulosic (acrylic, polyamide, polyester, etc.), and textile glass.

The term "man-made" is also accepted in the United Kingdom, but elsewhere there is a profusion of terminology which necessitates considerable care when making comparisons of country data. In Germany and Japan, the term "chemical of cotton, rayon filament yarn offered consumers an alternative material having the appearance of a semi-luxury product at prices within the reach of many.

The first rayon used in short lengths was the waste from filament-type yarns. During the First World War, rayon staple was produced as a commercial item in Germany and used principally as a substitute for wool. As late as 1929, production in all of Europe totaled only 8.0 million pounds and was concentrated in three countries--Germany, Italy, and the United Kingdom. An additional 500,000 pounds was produced in the United States.

A rapid expansion took place in Western Europe during the period 1934 through 1938 and production of filament and staple rose from 414.5 million pounds in 1934 to 1,026.2 million pounds in 1938. In 1934-38, Germany and Italy accounted for about 64 percent of the filament and staple produced in Europe and about 89 percent of the staple alone. Less than 8 percent of the rayon staple produced in 1934-38 originated in the United Kingdom, where an excise tax on rayon kept development in check, and the rest was scattered thinly among Austria, Belgium, France, the Netherlands, and Sweden. Filament rayon was used as an outright substitute for silk in hosiery and dress fabrics, where price considerations overcame to some extent its marginal quality characteristics; rayon staple was used in many types of clothing fabrics as a substitute for both cotton and wool under much the same circumstances.

The per capita fiber consumption patterns for 1938 show the impact that man-made fibers had made on the consumption of both cotton and wool in the countries having totalitarian governments compared with other countries in Western Europe and the United States:

Country	Cotton	Wool	Man-made fibers
	Percent	Percent	Percent
Italy	54.0	5.6	40.4
Germany	42.3	16.8	40.9
Other Western Europe	66.5	25.8	7.7
United States	82.4	8.6	9.0

Commercial production of man-made fibers was limited to those manufactured with a cellulosic base until nylon and glass

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fibers" is widely accepted. In France, there is no all-inclusive term, but the phrase "artificial and synthetic" is used to cover cellulosic and noncellulosic products. In Italy, either the term "artificial" or "synthetic" is used to describe all man-made fibers, with "rayon" being used to include all cellulosic types and "synthetic and protein" being used for noncellulosic types. Belgian literature on this subject uses "artificial fiber" and "rayon" as all-inclusive terms but sometimes "artificial and synthetic" are also found. In the Netherlands, the term "man-made" is all-inclusive, but the word "rayon" is also used as an overall term.

Uniform terminology may some day be used internationally; meanwhile in this publication, the system used in the United States has been adopted.

fibers were introduced in the United States in the 1930s. Nylon was the first of many man-made fibers synthesized from a chemical base rather than from organic raw materials. This group of fibers is referred to as noncellulosics. Nylon-type fibers were produced during World War II in the United Kingdom and Germany.

By 1950 the Western European countries had the capacity to produce a volume of rayon and acetate staple equivalent to 2.6 million bales of raw cotton. While Germany's productive capacity after the war was less than half the volume of its peak wartime production, and Italy's showed only a modest increase over peak wartime production, together they still accounted for 55 percent of the capacity in Western Europe. Tremendous expansion of capacity had taken place in other countries. In 1950, the United Kingdom accounted for 15 percent of total Western European capacity, France accounted for 10 percent, and Austria accounted for 5 percent, and by this time substantial production capacity had also been built up in Belgium, the Netherlands, Norway, Spain, Sweden, and Switzerland. In that year, the production of noncellulosic fibers in Western Europe amounted to only 19.0 million pounds, compared to 145.9 million pounds in the United States; but the availability of man-made fibers in 1950 was considerably more widespread than in the prewar period.

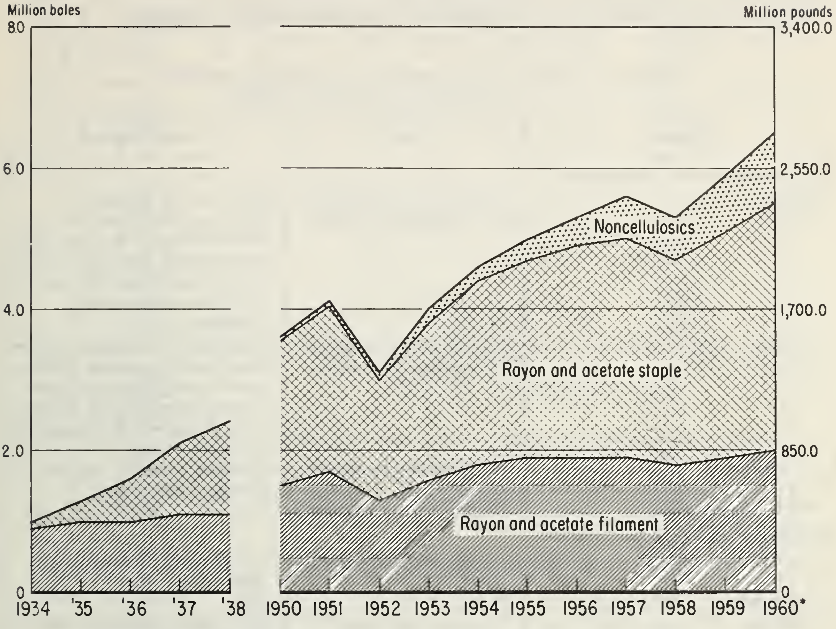
The postwar development of man-made fiber industries in Western Europe arose from a number of factors only partially related to the prewar situation. They can be grouped roughly into four major but interrelated categories: (1) European government policy, (2) difficulties in obtaining cotton, (3) price considerations, and (4) technological advances.

Immediately following the close of World War II, most Western European governments encouraged the expansion of man-made fiber industries. The urgent postwar problems confronting Western European governments were great in number and magnitude. They included the reconstitution of their industrial base and productive capacity of key industries, of which the textile industry was one. Employment of their populace and production of goods to supply domestic markets and to provide goods for export markets with which to earn foreign exchange were also major goals in this period. In addition, the pressures of the postwar dollar gap experienced by most European countries made imperative the use of materials within their own countries or available from nondollar sources to the fullest extent feasible. Many industries received government assistance of one form or another in order to meet these government objectives, and the man-made fiber industries were among them.

Wood pulp from nondollar countries, or from indigenous sources, provided much of the raw materials for fiber production without expenditure of dollar exchange. Man-made fiber producers ventured into their own and African fields and forests to assure pulp supplies during this period.

Production of man-made fibers fitted into the postwar goals of most Western European governments by providing national employment. In some cases, man-made fibers and their products

Trends in Western Europe's Production of Manmade Fibers, 1934-38 and 1950-60



* Estimate.

were considered to be advantageous export items and to provide goods that were quite salable in export markets.

In some quarters there were very real doubts about the wisdom of governments' encouragement of expansion of the man-made fiber industries. The arguments favoring heavy reliance upon cotton stood up well against those favoring increased reliance upon man-made fibers. Decisions were resolved to cotton's disadvantage based upon the events associated with the Korean war, when serious problems developed regarding the supply and price of cotton, and the further expansion of plant capacity for rayon production in Western Europe was set in motion.

Under these circumstances, the man-made fiber industries of Western Europe have benefited greatly from various forms of assistance from their governments. The most conspicuous has been the protection available to the domestic industries under generally high tariff rates. As of early 1961, after the first adjustments of external rates in Common Market countries, tariff rates on rayon staple fiber in Western European countries ranged from zero to 15.4 percent ad valorem, with the exceptions of the United Kingdom with a specific rate equivalent to about 40 percent ad valorem at prevailing prices and Spain with a rate of 56 percent ad valorem. Tariffs between the Common Market countries and between the countries belonging to the European Free Trade Association are scheduled to be eliminated. The comparatively high rates in the major producing countries have provided an effective shield behind which domestic man-made fiber industries have operated; they have permitted producers to maintain profitable domestic market prices and have lessened competition from imports.

Table 4.--Rayon staple: Import duties and other charges on imports as of March 1, 1961

Country	Rate	Other charges
European Economic Community:[1]		
Belgium	7.1 percent ad valorem	Sales tax 6½ percent.
France	15.4 percent ad valorem	Sales tax 26 percent ad valorem based on c.i.f. duty paid value. Customs stamp tax 3 percent ad valorem based on total custom charges.
Germany, West	8.3 percent ad valorem	4 percent tax duty paid value.
Italy	12.0 percent ad valorem	Sales tax 2.3 percent of duty paid value, plus a compensatory import tax of 3 percent of duty-paid plus sales-tax-paid value.
Luxembourg	7.1 percent ad valorem	2 percent turnover tax and 2 percent import tax.
Netherlands	7.1 percent ad valorem	None
European Free Trade Association:		
Austria	14.0 percent ad valorem	5.25 percent turnover tax on duty paid value.
Denmark	Free	None
Norway	1.3 cents per pound[2]	11.11 percent general turnover tax on duty paid value.
Portugal	9.4 cents per pound[3]	None
Sweden	8.0 percent ad valorem	4 percent turnover tax.
Switzerland	1.1 cents per pound[4]	5.4 percent sales tax.
United Kingdom	10.5 cents per pound	None
Other:		
Finland	Free	None
Spain	56.0 percent of c.i.f. value	5 percent of duty-paid value.
Yugoslavia	Free[5]	None

[1] External rate only. A common "external rate" to be established by 1970 probably at about 12 percent ad valorem.

[2] Rate is specific at 0.20 crown per kilogram.

[3] Rate is specific at 6 escudos per kilogram.

[4] Rate is specific at 10 francs per 100 kilograms for bleached and unbleached; rate for dyed is 15 francs per 100 kilograms.

[5] On commercial shipments.

Another kind of government assistance to the man-made fiber industries has been the various national tax laws governing the amortization of capital equipment. Directly after the close of World War II when various Western European governments encouraged the reconstruction and expansion of their basic industries, a tremendous expansion in the productive capacity for rayon staple fiber in Western Europe occurred, especially in those countries that had relatively small industries prior to the war (table 5).

Table 5.--Rayon and acetate staple: Production, average 1934-38, and production capacity, 1949-61, by country

Year	Austria	Belgium	Finland	France	Germany, West	Greece	Italy	Netherlands	Norway	Portugal	Spain	Sweden	Switzerland	United Kingdom	Yugoslavia	Total Western Europe
Average Production	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds
1934-38	- -	0.5	0.01	7.6	147.4	- -	103.8	0.4	0.1	- -	- -	1.5	- -	21.6	- -	282.9
Annual Capacity:[1]																
1949	31.0	34.6	11.6	112.5	[2]304.0	- -	297.0	22.0	20.0	- -	30.4	27.8	25.0	105.0	- -	1,020.9
1950	53.0	31.0	13.2	114.7	[2]330.0	1.6	286.0	23.5	26.5	- -	33.1	31.0	19.0	165.0	- -	1,127.6
1951	95.2	31.2	15.4	136.2	275.0	3.8	264.0	27.0	29.0	- -	37.0	31.0	20.0	185.0	- -	1,149.8
1952	95.2	43.7	20.7	138.9	320.0	3.8	265.0	27.0	28.6	- -	41.7	34.0	20.0	195.0	- -	1,233.6
1953	95.2	43.7	24.5	140.9	320.0	3.8	253.0	27.0	28.6	- -	51.0	33.0	22.0	210.0	- -	1,252.7
1954	96.0	43.7	27.5	138.9	330.0	3.8	182.0	27.0	31.0	- -	50.0	33.0	22.0	225.0	- -	1,209.9
1955	96.0	42.4	35.3	139.6	350.0	3.8	282.2	29.0	34.5	7.9	75.4	33.0	22.0	240.0	- -	1,391.1
1956	96.0	47.0	38.5	149.5	355.0	5.4	297.6	30.0	34.5	7.9	75.4	33.0	22.0	240.0	- -	1,431.8
1957	100.0	53.0	41.9	166.7	405.0	5.4	304.3	35.0	36.3	7.9	90.0	38.6	22.0	265.0	- -	1,571.1
1958	105.0	53.0	46.3	175.3	433.0	- -	304.2	40.0	38.5	7.9	81.3	40.0	22.0	340.0	21.5	1,708.0
1959	112.0	53.0	46.3	198.4	436.0	4.0	304.2	40.0	38.5	7.9	91.3	44.0	22.0	340.0	40.0	1,777.6
1960	120.0	53.0	41.0	208.4	436.0	4.0	304.2	40.0	38.5	7.9	91.3	46.0	22.0	340.0	40.0	1,792.3
1961	123.0	53.0	41.0	252.5	436.0	4.0	304.2	40.0	38.5	7.9	111.5	46.0	22.0	340.0	40.0	1,859.6
Percent increase	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
1949 to 1961	297	53	253	124	43	- -	2	82	93	- -	267	65	– 12	224	- -	82

[1] Rayon and acetate staple production capacity, in operable condition, on an annual basis as of March for 1949-60, and as of December for 1961.

[2] Prewar Germany.

Source: Textile Organon, Textile Economics Bureau, Inc.

In contrast to the tax laws of the United States, amortization tax rates on capital equipment in Western Europe are usually not precisely specified in the tax regulations of the countries; however, companies must be prepared to justify the reasonableness of the amortization rate used in their corporate tax return. Under the tax laws existing in some countries after World War II, it was possible to amortize a man-made fiber plant within 6 or 7 years and in some cases in only 5 years. This was particularly advantageous at a time when capital resources were subject to great pressures. Plant capacity in Western Europe for the production of rayon and acetate staple expanded from 1,021 million pounds in 1949 to 1,253 million in 1953 and to 1,778 million pounds by 1959, a 74 percent increase in capacity. Liberal amortization allowances were, of course, available to other industries as well, but in view of the fact that the postwar period was one of tremendous expansion for most European man-made fiber industries, they were greatly benefited.

There were other forms of government assistance to the man-made fiber industries of Western Europe, such as the establishment in Austria under the auspices of the German Government in 1938 of the then largest single plant in Europe for the production of rayon staple. The industry is not now nationalized, but the operation of this plant is still closely controlled by the Government of Austria because of its considerable importance to the Austrian economy. Government policy requires that it be afforded every possible advantage, in part because rayon staple is a large foreign exchange earner and the industry is a large user of wood pulp, a commodity basic to the economy.

Other financial advantages assisted the man-made fiber producers in plant expansion and production during this period. Exporters in a number of countries were allowed to retain certain portions of their foreign exchange earnings for the purchase of capital equipment or raw materials, although this arrangement is correctly assumed to be an export incentive as well as an incentive to the restoration of industries and the production of essential goods. Some countries also allowed exemption from import duties on the basic equipment required for the establishment of a new plant; others have provided exemptions from federal taxes for the purchase of raw materials for specified or indefinite periods.

Government-established export subsidies and tax rebates have served as an incentive for the export of man-made fiber products. In Italy a repayment of purchase tax amounts to 2 percent for cotton yarns; 3 percent for man-made fibers, rayon fiber, yarns, and fabrics, as well as cotton fabrics; and 5 percent for yarns and fabrics of noncellulosics. The rebate of the turnover tax for exports from Austria are as follows:

cotton yarn, not over 60's; coarse and fine cotton fabrics; rayon staple; and spun rayon yarns	5.8 percent
cotton yarn over 60's; medium cotton fabrics; and rayon fabrics	10.2 percent

In some Western European countries, government funds are available for research connected with the use of man-made fibers although these funds are usually supplemented by the man-made fiber industry association of the country. Government funds are also available in some countries for research related to cotton, wool, and flax.

It is also suspected that currency devaluations occurring rather generally throughout Europe in the postwar years gave impetus to the use of rayon staple in the price adjustments that invariably followed such action. The situation undoubtedly varied greatly from country to country but, to a great extent, the cost of cotton imports was payable solely in the higher priced foreign exchange, while the cost of raw materials for rayon staple was affected to a much lesser extent. It was estimated, for example, that after devaluation in Austria on May 4, 1953, the production cost for pure cotton yarns increased by almost 12 percent while that for rayon staple yarns increased less than 1 percent. The disadvantage to cotton products resulting from devaluation might have been offset if the relative value of cotton products in the export market had been substantially higher than the value of spun rayon products.

Price considerations played an important part in the expansion of rayon staple plants following the close of World War II. While in the prewar period cotton was cheaper than rayon staple in most countries, the postwar period generally found the price relationship between the two fibers reversed. During the immediate postwar years, the United Kingdom rayon staple prices were below 20 cents per pound, thus averaging about 25 percent under cotton prices. While the reversal of the prewar price relationship took place a little later in France and West Germany, where postwar rayon staple prices had been considerably higher than in the United Kingdom, cotton became higher on a price per pound basis around 1949 and has never regained its price advantage over rayon staple. The relatively low price of rayon staple in the postwar period was a real incentive to its consumption, especially since cotton supplies were then tight in Western Europe. Rayon staple was available as a relatively inexpensive raw material for textile production to satisfy the pent-up demand. The relative inexpensiveness of rayon staple commodities at the retail level was undoubtedly a factor in increasing sales because of the many demands against expendable consumer incomes at that time.

There is no way to measure the impact of the effect of U.S. export controls on cotton in 1950 upon the decision of the management of man-made fiber industries in Western Europe to expand plant capacity, but there is reason to believe that the two events were related. The United States experienced a short crop in the cotton year 1950-51 -- 10.0 million bales compared to 16.1 million of the year before -- as a result of the combined effect of the resumption of production controls and relatively poor yield. At the same time, there was an upsurge in demand resulting from the Korean outbreak; as a result, cotton prices[5] in Western Europe jumped from an average of about 35 cents per pound in 1949-50 to 54 cents per pound in 1950-51. It is reasonable to assume that the combined effect of reduced supply and increased demand and prices for cotton tipped the scales in favor of decisions to proceed with plant expansion. Between the beginning of 1950 and the end of 1952, capacity for producing rayon and acetate staple expanded over 200 percent in Austria, over 75 percent in the United Kingdom, about 45 percent in Norway, about 40 percent in Spain, and over 20 percent in France and the Netherlands.

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[5] U.S. middling 15/16 inch, Liverpool.

The growth of man-made fiber production in Western Europe over the past decade has been dramatic and relentless except for 1952 and 1958, both of which were "textile depression years". The average annual production in the 1934-38 period was equivalent to 1.7 million bales of cotton, although, of course, it was not all used as a substitute for cotton. By 1959, the volume reached a peak equivalent to 5.9 million bales of cotton and by 1960, an estimated 6.5 million bales. This compares with prewar cotton imports of 7.9 million bales and imports for the cotton year 1959-1960 of 7.7 million bales. Of the total man-made fibers produced in Western Europe in 1959, West Germany accounted for about 25 percent; the United Kingdom 21 percent; Italy about 16 percent; France just over 13 percent; Austria, the Netherlands, and Spain around 5 percent each; and the other countries the remaining 10 percent (table 6).

Almost 54 percent of the man-made fibers produced in Western Europe in 1959 was rayon and acetate staple, compared to about 40 percent prior to World War II. Rayon and acetate filament

Table 6.--Man-made fiber: Production in Western Europe, 1959

Country	Cellulosic		Noncellulosic			Total	
	Filament yarn	Staple	Filament	Textile glass	Staple	Quantity	Percent of production
	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Percent
Austria. . .	11.1	112.0	--	--	--	123.1	4.9
Belgium . .	23.8	38.8	4.0	--	1.5	68.1	2.7
Finland . .	2.1	29.2	--	--	--	31.3	1.3
France . . .	116.4	125.7	44.7	14.2	27.5	328.5	13.1
Germany,W.	160.6	366.4	46.7	--	38.5	612.2	24.5
Greece . . .	2.9	--	--	--	--	2.9	.1
Italy	163.1	179.7	40.1	3.3	15.2	401.4	16.0
Netherlands	69.6	30.8	10.0	--	5.0	115.4	4.6
Norway. . .	1.4	31.0	--	--	--	32.4	1.3
Portugal . .	4.5	.5	--	--	--	5.0	.2
Spain	32.8	68.4	3.1	--	1.3	105.6	4.2
Sweden. . .	17.3	45.4	--	1.0	.2	63.9	2.6
Switzerland	27.3	17.4	8.7	--	1.8	55.2	2.2
United Kingdom .	179.4	250.0	56.2	--	29.1	514.7	20.6
Yugoslavia	7.0	36.0	--	--	--	43.0	1.7
Total . . .	819.3	1,331.3	213.5	18.5	120.1	2,502.7	100.0

Source: Textile Organon, Textile Economics Bureau, Inc.

yarns accounted for about one-third of the total produced. The remaining 14 percent was noncellulosic fiber, which was not produced commercially in Europe during the earlier period. The greatest relative expansion since 1950 occurred in the production of noncellulosic fiber, which reached a total of 352.1 million pounds in 1959 compared to 19.0 million 9 years earlier. In 1959, France, West Germany, and the United Kingdom each accounted for one-fourth of the total; and Italy about 16 percent of the total. The remainder was produced in five other countries.

Originally, the products of man-made fiber industries were thought of as extenders or substitutes for cotton, silk, wool, or flax. In recent years, advances in technology have permitted a broadened concept for man-made fibers, so that they are no longer promoted by the manufacturers as substitute materials. In the postwar period, particularly the past few years, cellulosic and noncellulosic fibers have been developed with new characteristics; this change has projected them into end-uses that would not have been possible previously. In addition, the range of noncellulosic products has been extended; nylon has been followed by polyester, acrylic, polyvinyl alcohol, polypropylene, and other types of fibers. The noncellulosic segment of the man-made fiber industries appears still to be in a dynamic period of growth. Much work has been done to select fibers, or combinations of fibers, for specific end-uses and thereby open up opportunities that promised to benefit the man-made fiber producers as well as fabricators, distributors, and the ultimate consumers. Furthermore, prices of these new fibers have characteristically been reduced as production expanded and they gained mass market acceptability.

The many types of man-made fibers continue to compete strongly with cotton and wool, but are now competing with one another for the consumers' textile expenditures. The noncellulosic fibers seem to be making inroads into some of the same markets into which rayon staple and filament had made headway previously at the expense of cotton.

The national base of the man-made fiber industries in Europe will probably afford them the continued interest and support of their governments in the years ahead. In addition, the international character of many of the large companies gives rise to the belief that these companies will continue to work to their mutual advantage, and that their position in the aggregate will be strengthened by the operation of the free trade blocs. It would appear, therefore, that the endless interplay of many factors, both economic and political, will continue to contribute to the vigor of the man-made fiber industries in Western Europe. Thus, only with the greatest vigilance and well-directed effort can cotton hope to improve its position in the rising total market for textiles in Western Europe.

Rayon Staple

Among the many factors that bear upon the present and potential competition between cotton and man-made fibers in the Western European market, one of the most important is the cost of producing man-made fibers. This is particularly true of rayon staple and of the relatively new polypropylene fiber for which is claimed the lowest production cost among the noncellulosic fibers. The relative suitability of each natural and man-made fiber for specific end-uses cannot be overlooked, but in those end-use markets where both cotton and a man-made fiber are suitable, an evaluation of inherent fiber characteristics and serviceability is sometimes related to price. Price is, of course, based on cost.

Rayon staple is directly substitutable for cotton on the cotton spinning system, but the latitude of a spinner's choice to substitute rayon staple for cotton is limited by the end-product. For some items, cotton is used regardless of the price differential that prevails between cotton and rayon staple; for others, the manufacturer might consider it profitable to mix rayon staple with cotton when the price differential reaches a certain point; and for still others, rayon staple might be used outright as a substitute spinning material if the cotton-rayon staple price differential warranted such action and if rayon staple's qualities were believed to be acceptable in the end-product. Therefore, while price has some influence on the choice between these two fibers at the mill level, the extent to which price compels the choice of raw materials is related to the range of products in the mill schedule. Furthermore, it appears that even within this restricted area of competition large-volume substitution begins to take place only when staple is offered at prices that provide mills with a "saving" of something like 20 percent.

Since the end of World War II, rayon staple has commanded a considerable price advantage over cotton in all Western European countries except Spain, where cotton prices have been kept quite high in order to stimulate cotton production. It should be remembered, however, that the several types and lengths of rayon staple compete with the many grades and staples of cotton, so that a comparison of any specific quality of cotton with rayon staple -- even though it be standard 1.5 denier, 38 millimeter (the most common type used) -- has its limitations.

Rayon staple and cotton price quotations are not on the same delivery basis; rayon staple is quoted at mill delivered prices, while cotton is quoted c.i.f., to port cities to which costs for delivery to the mill must be added. Furthermore, since there is a substantial difference in the spinning waste between the two fibers, rayon's actual cost advantage to a spinner is considerably greater than the price differential between rayon staple and raw cotton.

Production Costs

Precise data concerning the cost of producing man-made fibers is impossible to obtain for a study of this kind. It is understandable that producers consider this information a business secret; however, data are such that one can make some general observations concerning cost that may be useful.

The actual range of costs of producing each type of man-made fiber is of concern to cotton interests, since production costs may set limits upon the ability of these fibers to compete with cotton for certain end-use markets. The cost of producing rayon staple, however, remains of the most immediate and direct importance at this time, in view of the fact that in Western Europe rayon staple is the most formidable competitor of cotton from a price standpoint in the largest range of end-uses, and it is produced in practically all Western European countries. Even at this time, however, other types of man-made fibers challenge cotton in specific end-uses, and it is quite possible that relatively new fibers and yet undeveloped fibers may in the future provide additional competition for cotton. While it is recognized that there are limitations in considering the cost of producing only rayon staple, it is nevertheless possible that the cost and price history of rayon staple may be indicative of the future of other man-made fibers as they become cheaper to produce and more widespread in their availability, achieve greater acceptability in mass markets, and find their way into new end-uses.

The cost of producing rayon staple has been the subject of several studies.[6] From the information that is available from these and other sources, it appears that costs vary considerably from country to country, between companies within the same country, and between plants of the same company. It appears also that the cost relationships of the various components to the total cost spread out over a considerable range. This may be due to differences in accounting methods, the complexities of accounting in integrated manufacturing enterprises, the distribution of costs where raw materials are manufactured and some portion of them sold, and other such factors.

In Western Europe in 1958 and 1959, the cost of producing rayon staple seemed to range around 20 to 23 cents per pound, about 20 percent of which was fixed cost and 80 percent of which was variable cost. Among the various components of the total cost of producing rayon staple, raw materials are the biggest cost factor and, undoubtedly, figure importantly in setting a limit in price determination. Labor costs are probably around 15 percent. Other important costs are overhead items, such as (1) reserves for depreciation, obsolescence, and increased cost of replacement; (2) interest rates which are generally high in Western Europe compared to the United States; and (3) research and development expenses. Additional factors affecting cost are: The size of the plant; efficiency of plant operation (including chemical recovery measures); economic value of byproducts; the level of plant operation; selling expenses; maintenance; taxes. In the case of a process for which others hold patents, the charges arising out of patent licensing agreements must also be included.

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[6] Dr. R. Robson, *The Man-Made Fibers Industry,* St. Martin's Press, Inc., 103 Park Avenue, New York, or MacMillan & Company, Ltd., London, 1958; Robert B. Evans, *Price Factors in Competition Between Cotton and Man-Made Fibers,* (unpublished report prepared for National Cotton Council, 1957); Ekizo Kashu, "Chemical Fiber Industry", *The Oriental Economist,* October 1953, p. 511.

Raw material costs seem to be about 75 percent of variable costs and about 60 percent of the total of variable and fixed costs, depending, of course, on local and national conditions. The principal raw materials for rayon fiber are dissolving wood pulp, caustic soda, sulfuric acid, and carbon disulphide. In the manufacture of a ton of rayon fiber, the following quantities of raw materials seem to be rather typical:

	Tons
Wood pulp	1.13
Caustic soda	.80
Sulfuric acid	1.45
Carbon disulphide	.19 to .35

The inputs for an individual company's operation may vary upward or downward from those shown above. In large measure, the input ratio for woodpulp depends upon the alpha content of the pulp used; the quantities of caustic soda required depend upon its strength; the quantity of sulfuric acid depends upon the strength of acid used as well as the degree of recovery; and the two input ratios for carbon disulphide indicate the difference between the use or lack of use of recovery techniques.

There is some difference in the costs of these raw materials among countries and even among the producers in a single country. These variations arise out of the price discounts available to large-scale buyers as contrasted to small-scale buyers, even though they may both purchase on contract rather than on the open market. In addition, cost variations derive from the degree of vertical integration of the companies and the manufacture by the fiber producer of some of the raw materials, particularly carbon disulphide and sulfuric acid.

Moreover, the total cost of producing rayon staple is affected by the considerable differences in wage levels, social charges, and tax levels and structures in the countries of Western Europe, as well as the age and size of the plants, their efficiency, the percentage of plant capacity utilized, etc. In Western Europe, production for stock is fairly rare, and would arise from unusual national conditions, such as Italy's labor laws, which in some circumstances cause overproduction to be less of a financial burden for a company than the discharge of workers. More than half of the production capacity in Western Europe was erected more than 10 years ago. Other cost differences may derive from the relative financial positions and policies of the various companies, such as those concerning the amortization of capital equipment.

In certain respects, man-made fiber producers, especially multi-fiber companies, enjoy a certain degree of flexibility and control over their costs. They are able to regulate the level of production so that they do not generally produce for stock. Furthermore, cost allocations in a multi-fiber company may be sufficiently adaptable to make marginal returns on rayon staple tolerable by the more advantageous returns on other products.

In certain other respects, however, man-made fiber producers are subject to a condition that contributes to the likelihood of intensified competition with cotton should cotton prices be substantially reduced from their 1959-1960 levels. The productive capacity and output of rayon and acetate staple in Austria, Belgium, West Germany, Italy, the Netherlands, Norway, Switzerland, and Sweden greatly exceeds the countries' current consumption level. Producers have shown a tendency to maximize the use of production facilities in order to keep unit costs as low as possible, since lower unit costs provide producers with the possibility for greater profit margins in domestic markets and greater competitive strength in export markets. For instance, it has been estimated that production at 60 percent of capacity would result in cost increases of more than 5 percent over costs at full capacity, presumably because of the inflexibility from a practical standpoint of some of the theoretically variable costs. Despite the overcapacity that exists in Western Europe in relation to domestic needs, it is not likely that rayon production plants will be converted to alternative uses. While it is possible to utilize some rayon staple production facilities for the manufacture of other cellulosic products, conversion to uses outside this field cannot be accomplished without great cost, and therefore, will probably not occur.

Also contributing to the inflexibility of man-made fiber producers are the labor laws found in some Western European countries, of which Italy is the outstanding example. Industrial employers in a number of countries are required to furnish severance pay scaled to length of service when employees are discharged, or are under pressure by other means to continue to employ unneeded personnel. This type of labor legislation encourages producers to maintain production despite low profit margins because the cutting back of the volume of production is even more uneconomic. Lowest unit costs are possible with maximum use of the productive capacity; operation at less than maximum raises unit costs so that producers are caught in the unhappy position of being subject to cost increases as output decreases.

As a result of the interrelationship of these various cost factors, total costs seem to be low in Austria, Italy, the Netherlands, and the Scandinavian countries, in comparison with other Western European countries. In Austria, only one company produces rayon staple in one of the largest rayon staple plants in the world. It was founded in 1938 through the joint financing of a German man-made fibers company and a group of Austrian textile manufacturing firms. Its purpose was to increase the supply of raw materials for the cotton textile industries of the two countries at a time when cotton imports were restricted by government regulations as a measure for war preparation. Based on 1958 production levels, about 80 percent of the company's wood pulp requirements were provided by an adjacent pulp mill in the form of crumbs, blown in large ducts across a ravine between the two plants. It is likely that the cost of wood pulp in such form and by such delivery method to this firm is quite advantageous. Other raw material prices seem also to be relatively favorable in Austria.

The Austrian producer depends heavily upon the export market as an outlet for its large volume of rayon staple production as shown by the figures below:

Year	Production	Exports
	Million pounds	Percent
1958	102.0	64
1959	112.0	61
1960	119.0 (est.)	64 (est.)

Much of the rayon staple produced by this firm also reaches the export market as Austrian-made fabric and finished garments. Export prices for the staple range from about 21.5 to 26.5 cents per pound and give some indication of the level of production costs. In 1959, the price of rayon staple to Austrian producers of fabrics and garments for export was 23.3 cents per pound, 17 percent under the price to Austrian buyers for the production of goods to be sold domestically.

In addition to the advantages derived from coordinated production and utilization of chemical raw materials, the dominant producer in Italy developed in the late 1930's a large domestic supply of cellulose for the production of rayon growing out of experimentation with a type of cane plant called "Arundo Donax", also known as "canna gentile". This cane appears to be the source of a low-cost raw material for about half of the company's cellulose requirements. Other Italian producers do not appear to have the advantageous cost position of the oldest and the largest Italian firm in this field. They all, however, benefit to some extent in their cost structure from the comparatively low wage levels in Italy.

Dutch production costs seem to be lower than those in other Western European countries with the possible exception of Austria and Italy. Upon the implementation of the Benelux customs union in January 1948, which abolished all tariffs between Belgium, the Netherlands, and Luxembourg, Dutch rayon filament yarn entered Belgium at a price about 28 percent under that of the Belgium product. A price advantage of lesser magnitude also existed for rayon staple. These price differentials reflected the relatively low wage and raw material costs in the Netherlands and the advantageous cost position of the Dutch industry, which was working at capacity while the Belgian industry was working at about two-thirds of capacity. The Belgians made considerable effort to meet this competition, but reduced their price to within only 7 percent of the Dutch price for filament yarn. In order to assist the domestic producer, the Belgian Government granted a subsidy to the users of Belgian yarn. This subsidy equated the prices of the Dutch and Belgian filament yarn. None was granted to users of Belgian rayon staple despite some price differential. The low cost position of the Dutch producer of rayon staple is recognized by other producers in the Common Market countries in their expressed concern over competition from that source within the European Economic Community.

Norwegian and Swedish production costs are also probably comparatively low, since they have the natural advantage of a large indigenous wood pulp supply. The valuation of imports of rayon staple by the United States from Norway and Sweden of about 20.1 to 21.7 cents is probably indicative of a low level of variable cost and perhaps total cost. The total cost of producing rayon staple in the United Kingdom, estimated at between 22 and 23 cents per pound before profits, is probably not among the lowest in Europe but has been protected by an unusually high specific tariff amounting to about 40 percent ad valorem based on prices prevailing in 1960.

As indicated above, production costs in important producing countries of Western Europe probably ranged between 20 and 23 cents in 1958 and 1959. In several countries, particularly Austria, Belgium, France, Italy, and West Germany, it appeared that the spread between production costs and domestic prices was such that lower domestic selling prices than those existing in 1960 seemed possible if the pressure of competition appeared to the producing companies to justify them.

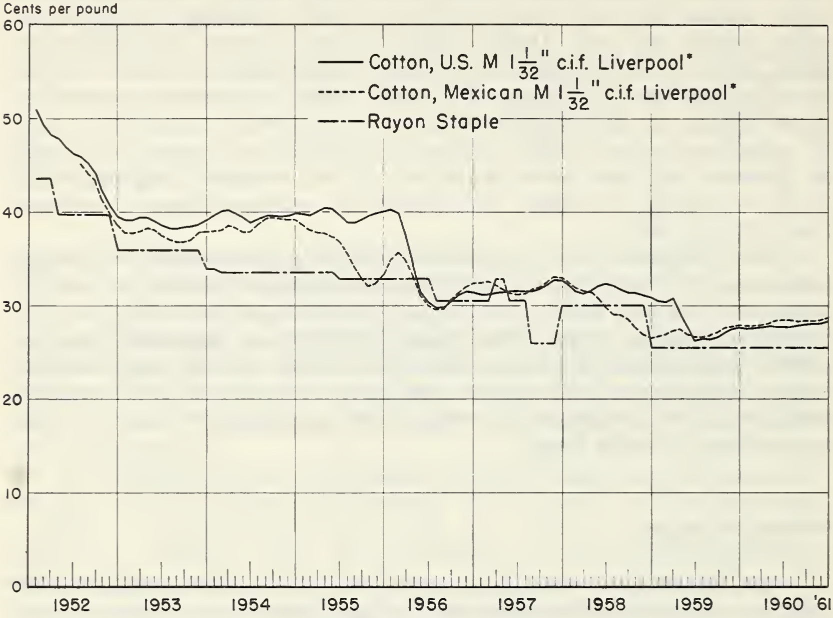
Pricing Policies

In theory, the minimum price at which rayon staple can be sold on a sustainable basis is the aggregate of raw material and other variable costs, plus an allowance for fixed costs and a reasonable profit for invested capital. These costs may be covered by a single price for the domestic and export market, but more often selective pricing is practiced whereby the domestic market price is established at such a level as to bear a disproportionate share of the fixed costs. This situation exists in part because of the protection of domestic markets by tariffs, and in part because of the importance of the export market to European producers in maintaining an optimum volume of production and sales, and the resulting competitive nature of the export market for rayon staple.

In the domestic markets of Western European countries, rayon staple prices seem to be related by discount to cotton prices. Rayon staple prices do not fluctuate from day to day to reflect daily changes in cotton quotations, but tend to be maintained until cotton prices have moved to a marked degree and for a sustained period. For example, in the United Kingdom, the rayon staple producer adjusted the price of rayon staple in April 1959, reducing it from 28.0 to 26.5 cents per pound, only after cotton prices had shown a steady downward trend for 15 months.

Cotton mills in Western Europe seem to expect the standard grade of "cotton type" rayon staple to be priced about 20 percent less than the price of cotton. This price spread represents the discount that mills anticipate for using a textile fiber that is their second choice of spinning material for most end-products, and the measure of incentive that man-made fiber producers feel compelled to offer to encourage consumption. Informed opinion in textile circles holds that cotton's competitive position is enhanced by

Price Quotations for Cotton in Liverpool and Rayon Staple in France February 1952 to January 1961



* 3-month moving average, centered.

a price margin not to exceed 15 percent over the price of the standard grade of rayon staple.

The price behavior of rayon staple in Western Europe in 1959 clearly demonstrated the policy of producers to keep rayon staple prices at an attractive distance below the price of cotton. At that time, production costs in the man-made fiber industries of Western Europe were rising, and prices of many man-made fibers other than rayon staple were increased. In the United States also, increasing costs and firmer demand resulted in increased prices of rayon staple. It would have been reasonable to expect price increases in Western Europe for rayon staple if they were not inextricably related to the level of raw cotton prices. Early in 1958 cotton prices, especially for growths other than American, began to decline under the influence of a combination of factors. This decline continued for a year and a half and precipitated changes in rayon staple prices, which followed cotton prices downward rather than following upward the prices of other man-made fibers.

This relationship between cotton and rayon staple prices in Western Europe is shown in the accompanying chart, wherein c.i.f. prices for U.S. and Mexican cotton in the Liverpool market, a bellwether of most European raw cotton markets, are compared with published prices in France for rayon staple, unadjusted for the usual trade discounts. By June 1959, prices for rayon staple had been reduced in Austria, Belgium, France, the Netherlands, the United Kingdom, and West Germany. Reduced prices for rayon staple under these circumstances indicated without doubt that manufacturers were meeting the increased competition from lower cotton prices rather than reflecting changes in their costs.

Rayon staple is protected by tariffs and other charges on imports in every producing country of Western Europe. Mills within a producing country are not able to purchase rayon staple at the same prices at which it is sold by their national producers in export markets. There are indications that national producers in Western Europe, through mutual understanding that is fairly widespread, do not invade each other's home markets with low-priced rayon staple and, therefore, need only meet the price competition of cotton.

A second major pricing policy of man-made fiber producers is the maintenance of a fairly stable price for their products. Importance attached to price stability is well stated by the report of the directors of the British producer in March 1958:

> "The Company's policy has always been to maintain a reasonable stability in its selling prices, and prices were increased only when it was impossible . . . . to avoid doing so."

This price stability contrasts with the price fluctuations and seasonal changes that are associated with the supply of natural fibers. Such price stability overcomes the need for protection against price changes by hedging in a futures market, but at the same time, makes it impossible to speculate in rayon trading, as is often true of commodities whose price fluctuations give rise to this phenomenon.

Almost all rayon staple is sold in Western Europe on long-term contracts; there is practically no open market for this commodity such as exists in Japan and in the United States. Discounts between buyer and seller for prompt payment and volume of purchases are common. In addition, special discounts that are not reflected in published price statistics probably form the basis for price adjustments under extremely competitive trading conditions.

In the aggregate, Western European countries export about one-third of the rayon staple produced, but the volume that individual countries export ranges from nothing to over 90 percent of production. Price competition between producers selling rayon staple in the export market is considerably more intense than in the home market. The pressure of excess capacity can be seen in the relationship between domestic and export prices. The output beyond a country's requirements is almost always sold in the highly competitive export market at prices that are lower than domestic market prices. For example, the declared value of U.S. imports of rayon staple from Austria, more than 60 percent of whose staple production is exported as fiber, is 20.8 cents per pound compared with a price of 27.8 cents per pound for staple for use solely in the domestic market. In the other Western European producing countries having the capacity to produce rayon staple in excess of domestic needs, the spread between U.S. import values and foreign domestic prices seems to be considerably less than in Austria, but is generally between 2 and 4 cents. Sweden, for example, which has exported between 60 and 80 percent of its production since 1953, has maintained a domestic price of 23.7 cents per pound since mid-1958, compared to usual U.S. import values of between 20.1 and 21.7 cents per pound. In order to maintain a certain level of output, producers sometimes sell at different prices among the various export markets or quote especially low prices for specific export orders in an effort to get the business.

While it is true that domestic markets in Western Europe have generally been protected and export markets have been competitive, producers in Western Europe have not priced sales to their customers in Western Europe outside their national boundaries as export shipments. Significant differences in the price of domestically produced rayon staple and that originating elsewhere in Western Europe have not generally existed, as they have for shipments to the United States. There is evidence that the major European producers have for years maintained a "gentlemen's agreement" covering prices and distribution in European export markets, particularly with respect to selling into each other's home market at prices under the domestic price. Furthermore, European manufacturing firms are often related both financially and contractually, and respect each other's profit and loss statements so that there is no ruinous price competition. They do not operate under the type of antitrust laws that would prevent them from making mutually advantageous price and marketing arrangements. The situation prevailing in 1958, which resulted from softened domestic demand on the European continent, the shrinking of export markets elsewhere, and the expanded capacity for the production of rayon staple, may have heralded the weakening of these unpublicized price and market arrangements. Pressures were greatest in those countries whose production capacity far exceeds domestic requirements and which therefore are very dependent upon export markets, and whose producers are not related financially to others in Western Europe.

The low price at which rayon staple is exported from some Western European countries to the United States compared to their domestic market price has given rise over the years to dumping charges against some foreign suppliers. A technicality in the Antidumping Act prior to August 1958 prevented the assessment of dumping duties in the event of finding of dumping by the Secretary of the Treasury.[7]

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[7] The Antidumping Act provided that the Secretary of the Treasury should make a finding of dumping in the event that (1) the price to the United States was determined to be less than its fair value and, (2) a determination of injury by the Tariff Commission had been made. Determination of "fair value" was based upon the price at which goods were sold to all purchasers in the domestic market of the country of exportation. The assessment of dumping duties required a report of the

Declared import values represent market or selling prices, f.o.b. the exporting countries, and these are the values upon which import duties are based according to U.S. Treasury Department Regulations. These values may be interpreted as import prices after addition of freight, duty, and other costs. The following import values for the month of October 1960 are for rayon staple, other than carpet staple greater than 8.0 denier.[8] Although carpet staple is not included, these values are not representative of standard rayon staple to the extent that other types are included. A comparison of the import values with the domestic prices for standard rayon staple in the countries of origin indicate the apparent spread.

Country	United States import value	Domestic market price
	Cents per pound	Cents per pound
Austria	20.8	27.9
Belgium	22.7	26.8
France	24.4	25.5
Italy	23.2	26.8
Sweden	20.1	23.7
Switzerland	22.8	25.1
West Germany	23.8	27.0

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foreign market value of such merchandise. In a preponderance of cases it was impossible for the U.S. Government to determine a foreign market value because of the requirement that such value be based upon a "freely offered home market price" and because of the general use of restrictive clauses in domestic sales contracts in Western Europe. An amendment which became effective on August 14, 1958, revised the Antidumping Act to read "sold, or in the absence of sale, offered for sale", so that this technical loophole was eliminated. In late September, 1960, the U.S. industry filed a number of dumping complaints with the Treasury Department concerning shipments from various supplying countries. Early in 1961 the Treasury Department ruled that imports of rayon staple from Belgium and France were being dumped and investigations by the Tariff Commission are being undertaken at the time of writing. Decisions by the Treasury Department regarding shipments from other countries are still pending.

In addition, an escape clause action was instituted by the Tariff Commission in October 1960 for the purpose of determining whether rayon staple was being imported into the United States in such increased quantities as to injure the domestic industry as a result of customs treatment reflecting tariff concessions granted under the General Agreement on Tariffs and Trade. GATT concessions had reduced the tariff on rayon staple from 25 to 15 percent.

When this publication went to press, the Tariff Commission had not announced its findings on the dumping cases, which could result in assessment of antidumping duties. The Tariff Commission's decision on the escape clause action was a finding of no injury.

[8] Schedule A number 3810050, "Synthetic filaments not over 30 inches, n.e.s."; carpet and rug staple of this description is reported separately as Schedule A number 3810030.

It is the practice of foreign producers to ship rayon staple to the United States through agents in New York or through affiliated companies in the United States who, in turn, sell to U.S. mills. According to trade reports, mills in the United States are consistently able to obtain foreign rayon staple at prices 1-1/2 to 2 cents under the going rate for staple produced in the United States.

In the past few years, there have been sharp increases in the production of cellulosic fibers with new characteristics and in the production of new noncellulosic fibers. At present, these are probably more profitable than rayon staple has been to many Western European producers at recent cost-price relationships. Among the comparatively new noncellulosics that have entered the arena of textile raw materials are the polyester fibers, acrylic fibers, and more recently the polypropylene fibers. Interest in these fibers has been great, but the end-use suitability and consumer acceptance for most of them are still in the process of development. To date, in each of the producing countries, their prices have been several times the price of rayon staple; it is unlikely, however, that these prices are a gauge of the cost of production. At such prices, some of these fibers are considered competitive with cotton only in the sense that all textile fibers are competitive within the total market for textile goods.

If these products follow the price patterns established by rayon staple, rayon filament yarn, and nylon, it can be expected that their prices will be lowered. Theoretically, this would happen as the market for these newer products becomes saturated at prevailing prices. Lower prices would also be brought about by reduced production costs derived from improved technology and increased volume of production to meet the rising demand that may be expected as those new fibers gain market acceptability. Increased consumer interest will be brought about by intensive publicity and also from the wider movement of goods within the mass markets created by the Common Market and the European Free Trade Association. Added to these pressures on prices are those that will follow from increased competition between the producers as the manufacture of these newer fibers becomes more widespread, unless, of course, the Western European producers exercise restraint among themselves, as they have done for rayon staple. This would not overcome the competition that might be brought to bear from outside such an entente, in spite of the tariff barriers that may prevail. When the prices of the newer cellulosic and the relatively new noncellulosic fibers are reduced, there is almost certain to be greater competition among the noncellulosics, as well as between the noncellulosics and cellulosics, including rayon staple. Before the aggregate of these shifts affects the supply-demand relationships of rayon staple, however, price competition between rayon staple and cotton is almost certain to increase in Western Europe.

Price and End-Use Competition

Cotton, rayon staple, and each of the other textile fibers and yarns are all in a very real sense competitive with one another. Each of the fibers is available for the entire spectrum of end-uses but, as a practical matter, for any single product the choice of suitable fibers is considerably more limited. Even so, a complete analysis of interfiber competition would be a most complex undertaking and is clearly beyond the scope of this report.

Since this study relates primarily to the competition confronting cotton in Western Europe, it is concerned principally with competition between cotton and standard rayon staple, cotton's major competitor from price and end-use standpoints, although future competition from other fibers -- especially the new noncellulosics-- cannot be overlooked. It would be misleading, however, to assume that an analysis of price, cost, or any individual quality characteristic of cotton and rayon staple would give the answer to the question of competition, and also that an analysis of interfiber competition can be divorced from consideration of the end-product. Furthermore, not all cotton is the same -- it can be short, medium, or long staple; it can be rough or fine, weak or strong; and it comes in many grades denoting other characteristics. Rayon staple should not be thought of as a single commodity either. Although the standard type is 1.5 denier and 38 millimeters in length, in Western Europe it can also be obtained for special purposes in deniers ranging up to 50 and staple lengths up to 8 inches. Moreover, it can be crimped, "spun dyed", or both for special effects. Within the past few years, high tenacity[9] rayon staple has been available and found acceptance on the basis of special attributes not found in standard rayon staple, and other new types of rayon staple have been introduced even more recently.

In addition to these many variables in the two raw materials are the many textile markets in which competition occurs. One of these is created by the manufacturer who is forced to make a choice of fibers to spin. The weavers, where this operation is independent from the spinning process, create a market by their choice of yarns to weave. Independent converters, whose function is to advance the finishing of loom-state fabric, industrial users, exporters, and others exercise choice and create a market for grey goods. The finished fabric flows from converters in many directions -- to the retail outlets, to the cutting-up trade, to industrial users, to wholesalers, jobbers, and exporters. Each group, in a sense, creates a separate market. In each there is interfiber competition of varying degrees, although some observers might argue that the choice at any given level has been narrowed by the decisions made at the previous levels, and even the expected reactions of buyers at the next stage.

There are pronounced differences among the textile markets of the several Western European countries that would invalidate generalities about the Western European market as a whole and would lead to some false conclusions. One indication of these differences is the relative importance of the three major uses of textile products in a national market, as shown by the following table involving the consumption of textile fibers, averaged by weight for the years 1954 through 1957.[10]

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[9] Sometimes referred to in Western Europe as "strong staple".

Country	Clothing	Household	Industrial
	Percent	Percent	Percent
Belgium	59	25	16
France	57	21	22
Germany, West	60	21	19
Italy	58	28	14
Netherlands	54	32	14
Sweden	60	23	17
United Kingdom	50	25	25

Source: Studies of Factors Affecting Comsumption of Textile Fibers, Part I, pp. 45 and 46. International Cotton Advisory Committee, Washington, July 1960.

From the viewpoint of the manufacturer, it appears that competition between cotton and rayon staple now arises mainly from two major factors: (1) The relative profitability of textile products based upon the spread between raw material costs and selling prices; and (2) the quality characteristics that can be obtained from cotton and from rayon staple separately or in combination. The complete substitution of rayon staple in products for which cotton was formerly used exclusively and the fiber blending of rayon staple and cotton are both practiced because of the two foregoing considerations. Needless to say, many other intricately related factors, such as the availability of cotton supplies, the net cost differential in spinning various fibers, and the supply-demand relationships for the end-products, also bear upon the choice of a fiber by a spinner.

Extensive market surveys conducted by national industry groups cooperating with the Cotton Council International have shown that for many end-uses the Western European consumer almost always prefers cotton to rayon goods because of cotton's basic quality characteristics. At the retail level, rayon staple products, or blended cotton-rayon goods, are sometimes purchased instead of pure cotton because they are less expensive or because they are not identified as to fiber content. In a few countries, the notable example being the United Kingdom, blended cotton-rayon goods are promoted on the quality characteristics claimed for them. For some industrial goods, price is related to the utility of the product. For example, in France industrial rubber belting with a textile base made of man-made fibers -- particularly nylon and rayon filament -- is approximately 40 percent more expensive than that made with a cotton base, but the former is gaining an increasingly greater share of the market because it will last more than 40 percent longer than cotton.

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[10] In the United States in the year 1959, it is estimated that of total textile fibers consumed, 39 percent were for apparel, 26 percent for household, and 35 percent for industrial uses.

Cotton and Rayon Staple Price Quotations

Cotton prices in Western Europe are quoted on a c.i.f. basis at certain European ports, Liverpool, LeHavre, Bremen, among others. Cotton spinners usually buy through cotton merchants, or agents, at these European cotton centers. The price of raw cotton at the mill door consists of the c.i.f. price, plus interior freight and certain other charges. Freight costs are related to the distance of the mill from the port and the mode of transportation used. To average mill points in West Germany, for example, freight costs total about 25 points (one-fourth of a cent) per pound, which would be fairly typical for most other Western European countries. "Other charges" include fees for such operations as receiving the shipment on dock, tagging, weighing, surveying for damage and excessive exterior humidity, sampling, taring, and other such services. Charges for these services are estimated to amount to about 20 points per pound.

Prices of rayon staple are quoted delivered to the mill and are subject to various trade discounts known generally only to the buyer and the seller. Thus, prices for cotton quoted traditionally on a c.i.f. basis and published prices for rayon staple are not exact equivalents, but this does not rule out the value of making comparisons between them as is done at various places in this report.

It is generally recognized, however, that since about 1954, rayon staple has been priced in several Western European markets in the general range of 80 percent of the average price of a good-quality, medium-staple cotton over a period of some months. This price relationship and the availability of rayon staple during times of raw cotton shortages have been two of the strongest attributes to recommend rayon staple to the cotton industries of Western Europe. Moreover, compared to cotton, the price of rayon staple has been relatively stable, while in the years since World War II, raw cotton prices have fluctuated as a result of economic forces outside, as well as inside, the consuming countries.

The existence of a price spread between rayon staple and basic qualities of cotton of the magnitude that has tended to exist in recent years has a special appeal to mills that think they can lower their average raw material cost without sustaining any decrease in selling price. However, where rayon staple is used with this as the principal, or only, objective--as contrasted with its use in those products where its inclusion offers the consumer some end-use benefits for which he is willing to pay accordingly--the informed and conscientious converter and the final consumer may be interested in the blended material only if it is priced in such a way as to make it a "good buy". Under these circumstances, the degree of buyer knowledge and the extent of competition in the various levels of the textile trade would be important factors in determining whether the manufacturing margin and the net profitability of the consuming mill would be more favorable if it relied wholly upon cotton, on staple fiber, or upon some combination of the two raw materials.

Comparison of Cotton and Rayon Staple Costs to Mills

The difference in price between cotton and rayon staple, even after the adjustment of the cotton price for freight and other charges, is not an accurate measure of the cost spread between rayon staple and cotton in most of Western Europe. Although accurate information on this subject is probably unobtainable outside a mill manager's office, it is possible to make some useful estimates regarding cost differentials.

There are at least two important measurable factors that bear on the cost relationship between cotton and rayon staple. First, cotton's price increases with staple length while the price of rayon staple in lengths suitable for spinning on the cotton spinning system does not vary by staple length. Second, there is a considerable difference in the waste obtained in processing the two fibers.

Manufacturing waste through the yarn stage varies between 8 and 16 percent, depending upon the grade of the raw cotton, efficiency and types of machines used, and the processing organization. Generally, more waste is obtained in the processing of cotton for finer carded counts than for coarser counts. In the manufacture of finer counts, it is the practice to reduce production rates in order to obtain the cleaner, less neppy stock that is necessary for high-quality end-products; therefore, more lint is sacrificed. Processing waste increases to as much as 25 percent in the manufacture of combed cotton yarns. However, since some of this waste is usable in the mill or salable, it does not represent a total monetary loss.

In contrast, practically all rayon staple fibers are of spinnable length and there is little nonspinnable material in the product. As a consequence, the waste factor for rayon staple is usually no more than 3 percent. Furthermore, it seems to be substantially the same regardless of the staple length and final product -- coarse, medium, or fine goods.

In the accompanying chart, the quoted prices of cotton and rayon staple in Western Europe as of February 1961 were adjusted to show the net effect of these differences to arrive at the cost per pound of spinnable fiber to the mill. The mill delivered prices for cotton were based upon Liverpool quotations, plus estimated average freight and other charges. The cost per pound of spinnable cotton fiber was computed by adjusting the resulting figure for manufacturing waste derived from processing the various grades and staples of cotton that would be used for coarse, medium, and fine goods. Prices in eight Western European countries for standard, 1.5 denier, 1-1/2 inch[11] staple viscose rayon, a type offered in competition to practically all grades and staples of cotton, are used as a basis for the chart. Since these prices are on a "mill delivered" basis, they did not require adjustment for freight or other charges; but the cost per pound of usable rayon fiber shown on the chart does take into consideration a 3-percent manufacturing

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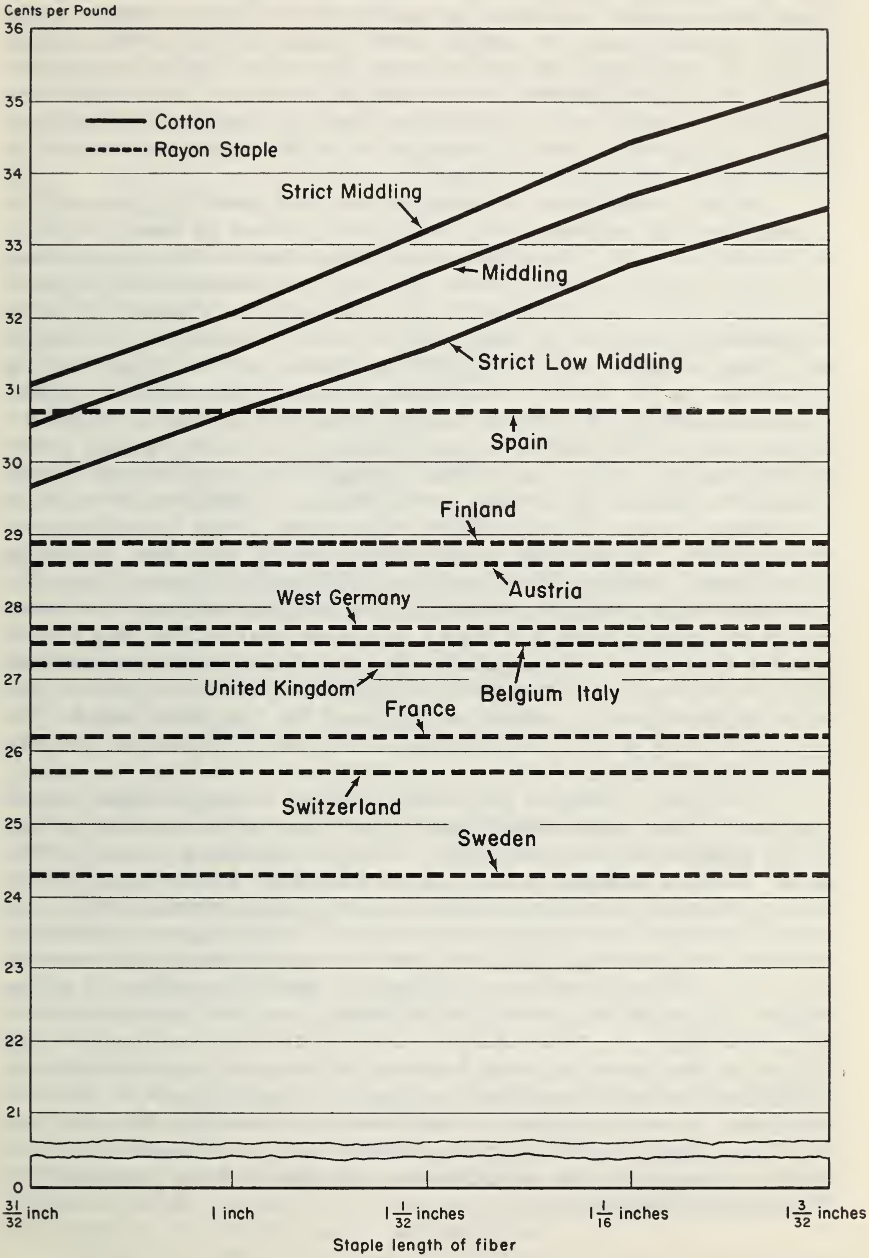
[11] Described in Western Europe as 38 millimeter.

Cost of Cotton and Rayon Staple in Selected Western European Countries Adjusted for Manufacturing Waste, as of February, 1961



waste factor. The quotations for cotton and rayon staple upon which these costs were based may be an indication of the "going price", but they do not take into consideration the price levels at which sales were actually made. Trade discounts for volume and prompt payment are usually available to purchasers of rayon staple, while cotton prices may be traded down from offering prices if this action is warranted by the size of the order. Such adjustments would, of course, further lower costs to the mill. This comparison of these estimated rayon and cotton costs per pound of usable fiber shows the greater cost advantage of rayon staple over cotton as cotton grade and staple increases.

In the manufacture of medium and fine quality goods, a preponderance of medium and long staple cotton is used, which is subjected to more processing than cottons used in the manufacture of coarse goods. As a result, the cost per pound of usable cotton increases with the fineness of the end-product. Since there is no comparable increase in the cost per pound of usable rayon staple as staple length and processing increases, rayon staple's cost advantage is of greater magnitude for medium and finer goods.

Cotton will be used for a large number of products regardless of its cost relationship to rayon staple, since the quality characteristics of cotton so often outweigh the cost advantage that might be gained by using rayon staple. However, there is an increasing range of both woven and knitted items for which spun rayon yarns, or blended cotton-rayon yarns, can and are being substituted. With a substantial cost differential between these two raw materials, outright substitution or blending may provide lower costs; increased profit margins can also result if selling prices can be maintained. While there obviously can be no hard and fast rule, short-term, narrow price fluctuations do not seem to cause a mill manager to make adjustments in the stock mix for the manufacture of yarn, except perhaps for fabrics traded on a highly competitive basis.

A further purpose for which a mill manager might be encouraged to use rayon staple is as a means to meet price competition at the wholesale and retail levels. When a manufacturer's objective is to meet a reduced price line at wholesale and/or retail levels and to maintain a reasonable profit margin, it is necessary to pare costs to meet the target sale prices. There are a number of courses that may be followed, such as using lower grade cotton, but cost savings can also be achieved by the increased use of rayon staple. With this objective, the manufacturer's decision to increase the percentage of rayon staple in the yarn would not necessarily relate to the price spread between cotton and rayon staple, but rather to the total manufacturing cost and sales price of his end-product. In such instances, cost reductions resulting from the use of rayon staple could be, and probably are, passed on to the consumer, especially for merchandise intended for the "low end" of the consumer's market.

Blending

The process of blending man-made fibers with cotton in the yarn manufacturing stage and the use of pure cotton yarns with yarns of other fibers in the weaving stage has been developed only within the past 25 years. Although data to show the relative importance of these two basic types of blended fabrics is not available, there is reason to believe that most fabrics are made from blended yarns that are manufactured from two or more textile fibers, rather than from yarns made from a single type of textile fiber. There is no agreement whether on net balance the practice of blending is favorable or unfavorable for cotton, although some cotton leaders in the United States have held that man-made fiber used in a cotton-mixed fabric displaces cotton, and, therefore, that blending reduces cotton's total market. Man-made fiber producers generally appear to favor blending. This is understandable, for the practice undoubtedly increases their sales of rayon and other man-made staples for those end-products for which man-made staple could, or would, not be used alone.

For some time, blends produced on the cotton spinning system were almost exclusively mixtures of cotton and rayon staple. Rayon staple has also been mixed with wool on the woolen spinning system and with linen, silk, and even jute. There is now a tendency in the more advanced textile producing countries to mix non-cellulosic man-made fibers with cotton and to mix more than two natural or man-made fibers. From the standpoint of a spinner, there are three basic objectives in blending: (1) To obtain properties that might not be obtainable by using a single fiber; (2) to obtain special style effects such as texture, cross-dyeing, and semi-luster; (3) to reduce raw material costs.

Some advocates of blending in Western Europe contend that the use of cotton in blends increases the total consumption of cotton, on the theory that cotton is thereby used for fabrics which if not manufactured of blended yarns would be made solely of fibers other than cotton. They believe that "new design thinking" has extended cotton's range and has given the consumer a wider variety of products in which cotton is used than ever before. They hold that because cotton is now found in a wider range of goods through blending, cotton's market has been increased rather than decreased, and that this advantage will continue into the future as new combinations of fibers and yarns are developed.

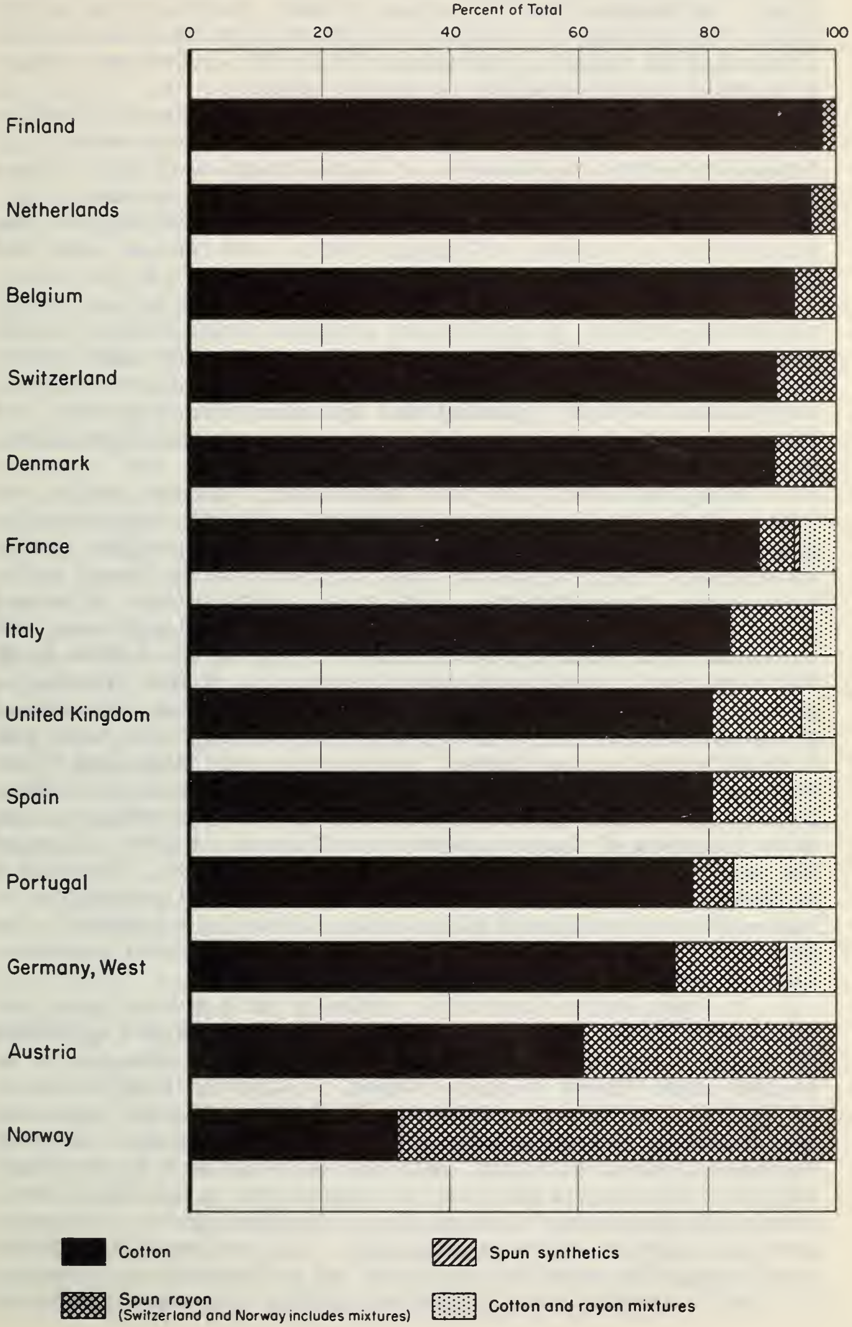
Advocates of rayon-cotton blending, while admitting that they do not accrue to all fabrics and end-uses, claim the following advantages for blended fabrics: Raw material cost economy; uniformity of yarns; lustrous yarns and fabrics; good dyeability; softness and improved drapeability; reduced processing for white goods; and improved properties after certain resin treatments. The raw material cost economy may be offset or reduced because of the special handling required for blended goods, the higher shrinkage that results, and possible lower selling price.

It must be recognized that the advantages claimed for blended fabrics are not unique to blended fabrics, but are found to a large measure -- and in many cases to a greater measure -- in fabrics manufactured from only cotton. Furthermore, all-cotton fabrics have many advantages not found in blends. For instance, tests have shown that an all-cotton fabric has greater tensile strength than blended fabrics of the same yarn count and weave. All-cotton fabrics are easily vat-dyed while manufacturers have experienced serious difficulties in the dyeing of cotton-rayon blended fabrics. Treatment for shrinkage will assure unexcelled dimensional stability in all-cotton fabrics. While the raw material cost reductions, which under some circumstances would increase profits, might be an attraction to the manufacturer, the consumer frequently does not benefit appreciably from the reduced raw material costs that might result from blending because they are not always passed on in the form of lower prices at the retail level, except perhaps for low-end merchandise.

It is quite likely that in the small sophisticated segment of the market where high fashion and variety are important, and where in former years the only acceptable luxury fabric was silk, the use of cotton in blended fabrics extends cotton's use. On the other hand, where the use of blended cotton-rayon yarns is concealed from the consumer as a cost-cutting device, and where blended yarns are used in standard high-volume goods, there is little doubt that they are a substitute for all-cotton material. It is readily apparent also that the volume of fashion goods where cotton's markets are now extended by its use in blends is small compared with the volume of blended basic fabrics that are now produced. The net effect of blending, therefore, is probably the curtailment of cotton's use.

There is a substantial variation in the degree to which blending is practiced in the several textile markets of Western Europe, and it is of interest to note the reasons for these national differences. In some countries, particularly West Germany and the United Kingdom, it appears that fibers are blended for the most part to obtain special fabric characteristics; much research is conducted on fiber blending in these two countries. Insofar as spinners in these countries are concerned, the primary objective of blending is to obtain certain quality characteristics rather than to reduce the average cost of raw materials or to extend their supply, although the man-made fiber interests conducting experiments on blended fabrics, and advertising them to the public, are not unmindful of the increased sales of their products that will result. In other countries, however, the overriding factor that influences spinners to blend man-made fibers with cotton is often simply a matter of increasing mill margins, especially in the basic utility fabrics.

The situation in France with respect to fiber blending is probably more complex than in most other countries. Here, there is a large market for basic textile items, strongly influenced by price considerations, sold on the basis of trademark rather than fiber content. It is for this reason that one finds sheets, pillow cases, and towels--for instance--of mixed yarns in the retail stores of France. In fact, these articles may be marked "coton" if



Types of Yarns Produced by Cotton Spinners in Western Europe, 1959 the cotton content is at least 85 percent. Formerly, the usual stock mix was two-thirds staple fiber and one-third cotton, but now the most common mix is 50 percent rayon staple and 50 percent cotton, which may indicate that the former mixture produced poor quality goods. In addition, the French Government encourages the practice of blending by requiring the use of at least 25 percent rayon staple in clothing manufactured on government contract.

Another influence in France has been its position of leadership in the fashion world. Some textile manufacturers are strongly influenced by the requirements of a small segment of their market whose tastes and purchasing power run to high-fashion items. Mixed fabrics are made to satisfy the demands of this high-fashion market for a variety of unique fabrics with unusual style and effects that can be achieved by blending two or more textile fibers.

The experience of German manufacturers prior to, and during, World War II has given them an extended period in which to test and perfect blended fabrics. In 1936 during the authoritarian regime, cotton spinners were required by law to mix rayon staple with cotton -- first 8 percent was specified, then 16 percent, and later 33 percent. At that time, some spinners also began manufacturing 100 percent rayon staple yarns and cloth.

After the war, the price relationship between cotton and rayon staple was reversed in Germany. Although costs of textile products could be lowered by the use of rayon staple, quality factors now seem to be the basis of promotion for blends rather than price considerations. The most extensive use of blended yarns has been in knitted products as hosiery and underwear, but advances are presently being made in the woven fabrics field. Much interest in techniques and other aspects of fiber blending is evidenced by the German cotton spinners association, which has a financial interest in a mill where experiments and tests with blended yarns are conducted. In recent years, man-made fibers have accounted for about 21 percent of the total quantity of fibers spun on the cotton spinning system, and of this, probably not more than 3 percent of the total were noncellulosics; however, more of the man-made staple is spun unblended than blended. Although it is likely that noncellulosics may offer increased competition to both cotton and cellulosic fibers in the German cotton industry, the development of new blends may generate additional consumer interest and consumption of textiles.

In Italy, buyers normally prefer a pure cotton fabric, and there is a great resistance on the part of consumers to blended fabrics of any kind. Consumer resistance to blends, as well as to man-made fibers in basic fabrics, is assumed to be the result of experiences before and during World War II when cotton was not available and when rayon was not well suited for the many end-uses to which it was put. Although somewhat the same conditions existed in Germany at that time, it is interesting to note the contrast between the consumer's acceptance of blended fabrics in Germany and his distrust of them in Italy. The relatively warm Italian climate may be a major reason for the undisputable popularity of all cotton fabrics; also, traditional-minded consumers and conservative producers undoubtedly contribute to the strength of cotton in the Italian market. By and large, rayon staple fabrics are not promoted in Italy on the basis of end-use characteristics but because of their cheaper price. Cotton is blended with rayon staple in Italy to cut costs and this, to some extent, can be achieved without knowledge of the Italian consumer. Cotton holds a strong first place, and any fiber, or fabric, challenging its position must be available at prices that represent a savings to the consumer.

Some experimentation is being conducted in the blending of cotton with other fibers in Italy. Special quality characteristics are sought by blending cotton with noncellulosics; while cotton is generally blended with wool in order to lower the price of the wool-like end-product. Man-made fiber producers of Italy are actively trying to promote interest in blended fabrics of various kinds, and have produced blended fabrics on an experimental basis. While spinners and weavers are willing to produce these test fabrics on a contract basis for man-made fiber producers, they are slow to accept them into their commercial production schedules.

The United Kingdom has a long history of experimental work on the adaptation of rayon staple spinning and the blending of textile fibers on the cotton spinning system. The most widely accepted standardized blend is made of two-thirds Peruvian Tanguis cotton and one-third rayon staple, and has been used mainly in the interlock knitting system. In the United Kingdom, the amount of rayon staple going into blends with cotton increased from 180,000 pounds per week at the beginning of 1952 to 670,000 pounds at the end of the year largely because of the acceptance of this standardized blend. These blended yarns have also been used with considerable success in woven drills for work clothes of various types. Extensive serviceability trials have served as a basis for claims that these blends had satisfactory resistance to abrasion and could withstand high temperature launderings. As of 1958 about 15 percent of the cotton-rayon blended yarns were processed into woven goods, and about 85 percent into knit goods, although blends appeared at that time to be making greater inroads into basic items such as household sheets and shirts.

The man-made fiber industry's representatives of England claim that the standard cotton-rayon blend has numerous advantages over an all-cotton fabric; they contend that it has a more pleasing appearance, has approximately the same wet and dry strength, a slight luster which is appealing, and in some instances a price advantage, depending upon the type of cotton fabric with which it is compared. Arguments for blending in the United Kingdom are usually related to end-use characteristics. Even in this market, however, the price of cotton has played an important part in the decision of spinners to manufacture blended fabrics when the price relationships between cotton and rayon staple were radically changed to the disadvantage of cotton. By 1954, the price of cotton had been about 11 to 14 cents per pound greater than rayon staple for a number of months; as a result of this substantial relative price advantage enjoyed by rayon staple, some spinners in the United Kingdom converted to 100 percent rayon staple spinning.

The experience of one large retail chain commanding a significant share of the total dry goods business in England has indicated a swing back to all-cotton fabrics. Whereas a few years ago almost the equal quantities of cotton and spun rayon fabrics were used by this firm, in a more recent period more than 4-1/2 times as much cotton fabric was used as rayon. The advantages of a low and stable price for all-rayon shirts were outweighed by the reliability of cotton in the laundry, and the rather recent availability of special finishes and designs that put cotton into the fashionable class of fabrics. In view of the importance of this firm in the merchandising field in England, considerable significance can be attached to the trend to cotton for the volume of inexpensive basic goods in which this company specializes.

There continues to be a large amount of effort and interest on the part of the man-made fiber producers of England to push blends. One technique that has been used rather effectively has been the requirement of minimum quantities of their product in various yarn mixes as a prerequisite to the use of their trademark by manufacturers in blended products. There seems to be considerable acceptance of the practice of blending by some cotton interests in the United Kingdom.

There is a minimum of blending in Austria, where blends are quite unimportant, with the possible exception of the knitting industry, in which a mixture of two-thirds cotton and one-third rayon yarn is sometimes used. There is severe competition in the domestic clothing market between cotton and all-rayon goods, particularly spun rayon. Although consumers have a decided preference for all-cotton products, price plays an important role in the final choice. It has been reported that at price relationships for the raw materials prevailing in recent years, there has been a 20- to 30-percent difference between the price of spun rayon and all-cotton fabrics at the retail level. The consuming public readily accepts 100 percent rayon fabrics for shirts, work clothing, summer dresses, and standard textile items, and as a consequence, Austria has traditionally had the highest per capita consumption ratio of man-made fibers in Western Europe. The incentive for the Austrian rayon staple producer to push blends has not been as great as in other countries. Within the past few years, however, the Austrian producer has conducted experiments on blends for woven fabrics, and the results of these experiments have been distributed to spinners in Austria and elsewhere. It is probable that there will be some increase in the use of blended yarns in the woven goods field as they are popularized in Austria. In Belgium and the Netherlands, the consuming public is considered to be somewhat conservative and has continued to demand well-known and well-accepted all-cotton fabrics. In both of these countries, there is practically no fiber mixing in the spinning stage, except on special order for the purpose of achieving special effects, an objective unrelated to the relative prices of the two fibers.

A team from Japan visited the major textile producing countries of Western Europe in 1958 to study various aspects of blended cotton yarns and fabrics. The team concluded that the extensive inroads of blends in the past resulted mainly from "the price of raw cotton, which was unstable at a relatively high level"[12] and that the fundamental advantage of blending would disappear when cotton was sold at prices competitive with rayon staple, except where blends were promoted on the basis of end-use qualities. This conclusion may well be correct. It may be of interest to note, however, that in 1959 another Japanese mission went to Europe to study the practice of blending. This group returned with substantially different findings and recommendations, following which (in the spring of 1960) an advertising campaign to push cotton-rayon blends in many consumer products was undertaken by nine textile firms in Japan. Increased promotion directed to blends by the man-made fiber producers of most of the Western European countries may bring about a public acceptance. In countries where producers continue to conceal blended fabrics from the knowledge of the buying public, however, it is likely that blends will continue to be regarded with suspicion.

Fiber Identification in Textile Products

Labeling of textile products is not legally required in any Western European country; however, in most countries trademarks are used to promote textile products. These are advertised by individual companies or by industry associations and have formed the basis for consumer guidance in the purchasing of textile products. Cotton promotion organizations in the various European countries have sponsored campaigns to advertise and promote the term "pure cotton" as an indication of fabric quality. There have also been some attempts by these groups to require the compulsory labeling of textile items, such as in the United States under a law which became effective in March 1960. To date, however, labeling of fiber content of fabrics and made-up goods has been completely voluntary.

The labeling regulations of several countries in Western Europe are set forth below:

Country	Labeling regulations
Austria	No fiber content labeling law.
Belgium	No fiber content labeling regulations, except that if fiber content is shown, it must be correctly given.
France	No fiber content labeling law. Term "cotton" may be used if fiber content is at least 85 percent cotton. Fabric must be 100 percent cotton to be labeled "pure cotton".
Germany, West	No fiber content labeling law except for wool.
Italy	No fiber content labeling law, except for silk and silk products.
Netherlands	No fiber content labeling law.
United Kingdom	No fiber content labeling law. If labeled, must be correctly stated. Rules have been published by the British Standards Institute regarding the classification and definition of fibers and textile products.

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[12] *Study on Blended Cotton Textiles in Selected Countries of Europe*, Monthly Report of Japanese Cotton Spinning Industry No. 140, August 1958, p. 2.

The lack of requirement of fiber identification has created a favorable climate for the concealment of blending without detection. In fact, it has been said that blended fabrics are produced in anticipation of consumer ignorance. It is questionable whether cotton interests can in the face of opposition within their national markets succeed in bringing about any changes in the legal requirements for the labeling of the fiber content of textile products.

There is a somewhat related problem of "care labeling" which is receiving international consideration. Care labeling is defined as labeling according to laundering and maintenance properties as opposed to labeling according to fiber content. There have been three international conferences on this subject. One was held during October 1956 in Gothenburg, one in January 1959 in Paris, and the latest in Amsterdam in September 1960. These meetings were attended by international and national organizations representing many groups whose interest extended to the full range of textile fibers, as well as textile standards, research, laundry, and retail sales.

At the Paris conference, there was concensus that it was necessary to establish an international code to enable housewives, commercial laundries, and cleaners to give proper treatment to soiled textile products. These instructions would cover washing temperature, tolerance for chlorine bleach, instructions on ironing, and proper dry cleaning agents. The proper "care labeling" of goods, of course, depends upon types of fibers in the fabrics, fastness of dyestuffs, special finishes, trimmings, and fittings used in the manufacture of the end-product.

A code using descriptive signs, symbols, letters and figures has been agreed upon by representatives from Austria, Belgium, Denmark, France, West Germany, Italy, the Netherlands, and Switzerland; other Western European countries may also adopt these symbols. The spring and summer collections for 1962 in West Germany will introduce this system of care labeling, which can be expected to gain quick acceptance elsewhere.

Even though care labeling would not overcome the concealment of blending to adulterate cotton, it would to some extent work to cotton's advantage. The undisputed superior launderability of pure cotton products would be evidenced by the information on care labels. Furthermore, it would encourage the proper handling of cotton fabrics with special finishes to enable the consumer to derive the full benefit of the treatments now given to cotton fabrics that were unknown only a few years ago, and thus ensure maximum service and consumer satisfaction.

Domestic Consumption and Fiber Distribution Patterns

In this analysis of interfiber competition, it is useful, while acknowledging the importance of textile export markets for some countries, to consider the domestic markets of Western Europe themselves. Estimates of availabilities of fiber for consumption in these markets are obtainable from the compilations of the Food and Agriculture Organization of the United Nations.[13] These estimates are derived from statistics of industrial consumption and industrial production of textile fibers, and exports and imports of man-made fibers, all types of yarns, fabrics, and so forth. The fibers covered are cotton, wool, and man-made fibers, which are the main fibers used in the manufacture of textiles for clothing, household and industrial purposes other than packaging materials and cordage.

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[13] FAO Commodity Bulletin No. 31 *Per Caput Fiber Consumption Levels,* 1948-58, and FAO Commodity Bulletin No. 25, March 1954 for 1938 data.

The FAO figures are not adjusted for increases or decreases in stocks of fiber products in mills and elsewhere in distributive channels, which are known to fluctuate rather widely. These figures, then, do not represent consumer off-take, but are indicative of the quantities of fibers available for use within a country. Annual figures are less reliable indicators for any year than a centered 3-year moving average, since the moving average smooths out the effect of textile booms and recessions. Furthermore, the averages reveal the persistent trends and patterns in the markets which underlie short-term fluctuations in the textile industry and trade.

The only prewar figures available, however, are those for the single year 1938, and these are used in this report, although their lack of comparability with postwar data is recognized. At the time this document went to press, postwar data were available for the years 1948 through 1959; these were averaged to give a series from 1949 to 1957. Per capita estimates for individual countries are derived by dividing by the population total. The centered 3-year moving averages of the FAO give an indication of the quantities of textile fibers available for domestic consumption and provides the best basis at present for comparing fiber consumption between countries. In this report, the FAO figures on textile fiber availabilities are referred to as fiber consumption for the sake of convenience, and per capita consumption for postwar years in the remainder of this chapter relates to 3-year moving averages, centered.

Postwar per capita consumption of textile fibers in Western Europe expanded substantially from prewar levels and reached a peak in 1957. The average per capita consumption rose from 15.0 pounds in 1938 to over 19.0 pounds in 1957. The 3-year averages centered on 1957 indicate that there continue to be great variations in the per capita consumption between countries from the highest of over 25.0 pounds in West Germany and the United Kingdom to the lowest of around 11.0 pounds in Portugal and around 8.5 pounds in Yugoslavia.

Greece, Italy, Portugal, and Spain--whose consumption of textile fibers was among the lowest in Europe in 1938--showed the greatest relative increases in consumption. The United Kingdom, with the highest prewar consumption in Western Europe at 26.2 pounds, totaled 25.8 pounds per capita in 1957. Therefore, the disparity between the countries having smallest and largest per capita consumption in postwar years has narrowed considerably since the prewar period. The differences that remain reflect the combined effect of many factors, including income levels, climate, and national customs and characteristics. It can be expected that in the years to come the differences will be further narrowed and the average per capita consumption will continue to increase, although probably not at the rate of the postwar years.

During this period of increasing fiber consumption in Western Europe, the composition of the total, that is, the relative importance of cotton, wool, and man-made fibers, has changed considerably. In 1938, cotton represented 59 percent of all fibers consumed, but has been dropping slowly until, in 1957, it was 54 percent of total fibers consumed. Cellulosic fibers--the only type then made--constituted 19 percent of all fibers consumed in the earlier year, but man-made fibers of all types represented 28 percent in 1957. Although cotton lost markets to man-made fibers, wool bore the greater relative decline. Only Germany and Italy, which before World War II were heavy users of rayon, have been using relatively less man-made fibers in recent years than in 1938. There is reason to believe that when per capita data for the years 1958, 1959, and 1960 are available, they will show a reversal of the downward trend in cotton consumption in Western Europe as a whole.

Textile leaders in Western Europe believe that part of the explanation for cotton's comeback lies in the greater use of shrinkage control and the acceptance of other special finishes, such as the ease-of-care treatments. Part of the answer also lies in the fashion image of cotton as a versatile and lovely clothing and decorating fabric for all occasions, and the impetus given this idea by the visits of the U.S. Maid of Cotton. In countries like Greece, Portugal, Yugoslavia, where the level of total textile consumption has been below the average of Western Europe, cotton has shared in the substantial increase in total fiber consumption; these increases undoubtedly reflect the rise in real income in these countries.

Cotton market development programs undoubtedly deserve considerable credit for the improved position of cotton in many of these countries. These programs are partially financed with foreign currency made available by the U.S. Department of Agriculture from the sale of agricultural commodities under Public Law 480. While the U.S. Department of Agriculture furnishes overall guidance and provides the assistance of agricultural attaches, most phases of the programs are conducted by the Cotton Council International acting jointly with the cotton spinners' association of each country. Programs for cotton were instituted by Western European countries on the dates shown: January 1956--France; June 1956--West Germany; January 1957--Austria, Belgium, Italy, Netherlands, Spain, and Switzerland; April 1958--United Kingdom; August 1958--Finland; June 1959--Sweden, and May 1960--Denmark and Norway. These programs involve many aspects of market research and have produced much useful information and publicity. In a presentation of cotton's usefulness and versatility as an apparel fabric, the Maid of Cotton, with her all-cotton wardrobe, visits Western Europe and other countries where market development programs are in effect.

Of course, it cannot be assumed that every dollar invested in cotton market development will result in a given increase in the use of cotton, for the complexity of the textile market defies such simple relationships. Market development programs are long range in nature, and it is unreasonable to expect that their value can be demonstrated by year-to-year changes when there are so many other factors at work on a short-range basis. Nevertheless, expert opinion has testified to the effectiveness of the market development programs despite the difficulty in applying statistical measures to their results. It is undoubtedly significant that there have been intensified efforts of man-made fiber companies as well as industry associations to step up their promotion efforts to counteract the effectiveness of the cotton market development programs.

In addition to these conditions, there are many other factors that affect total fiber consumption and the patterns of fiber consumption within each country. These factors in turn are affected by decisions made at many levels, governmental, industrial, and private. The state of industrial development within a country, status of the industry, company operation, influences on consumer choice, and many other economic factors have a bearing on interfiber competition. It would be folly to assume that all of these could be completely ascertained and analyzed. It is possible, however, to make some observations about the differences in fiber consumption patterns in several of Western Europe's important textile markets.

Austria

Austria presents an especially interesting situation. Prior to the war, cotton constituted about 73 percent of all textile fibers consumed per capita, one of the highest ratios in Western Europe. During the war cotton lost much ground. Since then, Austria has used relatively more rayon than any other country--over 40 percent from 1949 through 1953, which compares to an average of about 42 percent cotton and 15 percent wool in that 5-year period. From this situation, cotton has gradually--although very slowly--recovered some of its standing in the Austrian home market; finally by 1957, it constituted about 45 percent of total textile fibers while cellulosics fell to 34 percent and noncellulosics constituted 2 percent. The Austrian domestic market seems to offer an excellent opportunity to further increase consumer interest in cotton. Austrian buyers are "cotton minded" provided the price is right. Even though it is socially "frowned upon", installment buying introduced within the past few years may impinge upon purchases of textile products in favor of hard goods, although charge accounts, not generally approved either, might counteract this tendency.

Improved levels of living should continue to be reflected in increased purchase of textile products already expanded over prewar levels by about 40 percent. Cotton has moved up and can be expected to gain further if cotton prices remain competitive with rayon staple; however, the Austrian public readily accepts 100 percent spun rayon fabrics and the final choice often turns on the price of the end-product. Early in 1960, the single producer of rayon staple in Austria formed the Austrian Rayon Staple Fiber Institute for the purpose of establishing close contacts between the producer, the dealers, and the industrial customers in the Austrian market. This company may be making this effort to counteract the more favorable position that cotton has gained in the Austrian market since 1952.

Belgium

In the immediate postwar years in Belgium, textile purchases were at an alltime high as wardrobes were being replenished, a situation not typical of other European countries whose recovery came at a later date. An adjustment period, during which total textile fiber consumption dropped from a level of over 22 pounds per person in 1949 to under 18 pounds per person in 1953, has been followed by an upward trend culminating in fiber consumption of over 21 pounds in 1957. Consumer expenditures for clothing have consistently been around 14 percent of total consumer expenditures. This situation runs counter to the typical ratio of consumer expenditures for clothing when total consumer expenditures increase. This is particularly noteworthy in view of the relatively larger funds now spent by Belgians on vacations and consumer durable goods. Deferred payment plans for the purchase of major household goods have become somewhat common and if the trend continues, may make inroads on the consumer's allocation of funds for clothing.

In 1938, cotton represented over 68 percent of total fibers consumed per capita, but by 1957, its ratio dropped to 56 percent. On the other hand, man-made fibers moved from 7 percent to almost 24 percent of the total fibers consumed over this span of 19 years. Some of cotton's prewar market position has obviously been lost to man-made fibers, but wool has also been a significant loser.

Rayon staple is used mainly for specialty items rather than for blended or unblended yarns for basic fabrics as in some countries. Despite their conservative nature, consumers, to a substantial degree, have accepted rayon staple for upholstery items because, it is claimed, of the clear colors that can be obtained. Most knit goods manufactured in Belgium are of pure cotton, but there is some tendency to blend 15 percent rayon staple with cotton in yarn for men's underwear if the price relationships between cotton and rayon are too far out of line.

Both the 1957 and 1958 surveys of "Cotton Counts Its Customers"[14] showed that cotton sheets constituted 90 percent of the total sheet market, the largest single use for cotton in Belgium. Cotton products constituted 100 percent of the market for many other important end-uses, particularly for certain types of men's wear and household textiles.

France

In France, per capita consumption of textile fibers rose by more than one-third in the period 1938 to 1957 and in the latter year stood at over 21 pounds per person. In this expanding market, cotton's share dropped from 66 percent to around 57 percent, but the quantity of cotton consumed is computed to be about 2 pounds per person more than in the prewar period. On the other hand, man-made fibers moved from 7 percent of the total fibers consumed to over 23 percent in the same period.

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[14] *Le Coton et Ses Clients*, published for each year since 1957 by the Institut National du Coton, Ghent, Belgium.

Market surveys conducted in France by the Syndicat General de l'Industrie Cotonniere Francaise in cooperation with the Cotton Council International have determined that cotton has moved into stronger position in some important end-products since 1956. The largest single end-use of cotton in France is for the production of piece goods for the French Union Territories; the second most important is for bed sheets, either made up or sold by the meter for this purpose. The Syndicat General reported[15] that in 1956, 37 percent of the sheets sold were of pure cotton, 28 percent of cotton mixed with linen, and 35 percent were of pure linen and other fibers. The survey indicated that by 1958, 47 percent of the sheets sold were of pure cotton, while cotton-linen mixtures dropped to 23 percent of the total market, and only 30 percent were of pure linen and other fibers.

The haute couture, or high-fashion industry, exerts a strong influence in France, and can direct consumer's choice--particularly for women's clothing--into fabrics with special characteristics, such as crispness or softness, and thus, to some considerable extent, influence the choice of fibers. The many-sided nature of cotton, whose intrinsic characteristics have been exploited in recent years as never before by application of new textile production techniques, has met well the demands of the haute couture. This important pace setter, formerly identified only with luxury fabrics made of silk, now finds cotton fabric an interesting and varied medium. The French influence in the fashion world extends into sophisticated textile markets in other countries of Western Europe and elsewhere and has contributed to consumer acceptance of cotton as a "noble" fiber.

West Germany

Germany prior to World War II had the fourth highest consumption of textiles in Western Europe at 17.2 pounds per capita. Per capita textile consumption expanded by almost 50 percent over prewar levels and reached over 25 pounds by 1957. Total consumer expenditure for clothing grew by about 30 percent in real terms from 1950 to 1954, and this trend seems to be continuing. Consumer expenditures for textiles--ranging around 15 percent of total consumer expenditures--are among the highest in Western Europe. According to the Bremen Cotton Exchange, however, in recent years expenditures for textiles have increased only 70 to 80 percent of the average rate of increase in consumer incomes.

West Germany has taken a long road back to cotton. It is the only major textile producing country of Western Europe, that has, since the close of World War II, increased its use of cotton both actually and relatively compared to the prewar period. The regulations issued by the German authoritarian regime in 1936 were undoubtedly responsible for the early prominence of rayon staple in the cotton spinning industry in Germany. Although these regulations required the mixing of rayon staple with cotton, they encouraged spinners to make 100 percent spun rayon yarns in order to avoid the difficulties of manufacturing and marketing mixed yarn products. Thus, in 1938 more than 40 percent of all textile fibers consumed per capita in Germany were rayon, cotton comprised only 42 percent, and wool 17 percent. Even as late as 1949, German consumers used proportionately less cotton than any of their neighbors, other than those in Austria. In the years that followed, cotton's position strengthened, so that by 1957, it represented 50 percent of all fibers consumed in the German domestic market, while the position of man-made fibers of all kinds dropped to 31 percent. In 1959, spun rayon yarn constituted about 17 percent of the yarns spun by German cotton spinners and cotton and rayon mixtures constituted 8 percent.

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[15] *Les Clients du Coton,* published for each year since 1955 by The Syndicat General de l'Industrie Cotonniere Francaise, Paris, France.

Despite their unsatisfactory experience with rayon products prior to and during World War II, German consumers have come to accept blended cotton-rayon yarns in knit goods. It is possible that increased consumer acceptance of blended yarns in woven fabrics will be the next objective of the German man-made fiber producers. Notwithstanding the efforts of this group, the per capita consumption of cotton products has risen dramatically since 1949 from 6.8 pounds to a peak of 12.6 pounds in 1957.

According to the market survey conducted by the Institute of the German Cotton Industry and published in September 1959[16], more than 80 percent of all bed sheets used in West Germany and West Berlin were cotton, about 17 percent were linen mixtures and about 2 percent pure linen, and about 94 percent of all pillowcases and featherbed covers were cotton. Sheets, pillowcases, and featherbed and mattress covers combined constituted the largest single use of cotton in West Germany. Since 96 percent of the shirts used in West Germany in 1959 were made of cotton, the Institute considered other fibers unimportant as a raw material for this product and noted that cotton would continue to dominate the market; shirts constituted the second largest use of cotton in West Germany. Regardless of cotton's overwhelming position of prominence in some end-uses, however, the Institute pointed out that there was a trend toward lighter fabrics and toward blended fabrics which could affect the total consumption of cotton in the future.

Italy

Per capita textile consumption in Italy is among the lowest in Western Europe and reached only 13.9 pounds in 1957. This is a considerable improvement over the per capita consumption of 8.2 pounds in 1938, and represents a 70-percent gain, the highest in Western Europe except Spain. Basic to the low textile consumption levels in Italy are the general level of living and the warm climate.

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[16] *Tendency of Cotton,* Part I—Clothing and Home Uses, Institute of the German Cotton Industry, Ltd., Frankfort/Main, Market Research Department, September 1959.

Cotton consumption rose from 4.4 pounds per capita in 1938 to 7.1 pounds in 1957; actually it has not changed appreciably in quantity since 1949. Cotton consumption stood at 54 percent of total fiber consumption in 1938, and at 51 percent in 1957. Cotton was subject to stringent import controls until 1956 and this undoubtedly affected its ability to compete with other fibers in the domestic market.

Prior to World War II, the totalitarian regime, in an effort to overcome dependence on foreign sources for raw materials, encouraged heavy investment in man-made fiber production facilities and required the use of rayon by cotton spinners. This gave considerable impetus to the use of man-made fibers in Italy. As a result, cellulosic filament and staple provided 40 percent of all textile fibers used in 1938 and by the early 1940's production of staple alone was equivalent to more than half a million bales of cotton. In 1957, despite a considerable measure of consumer resistance, cellulosic filament and staple supplied about 30 percent of Italy's fiber requirements.

Although the warm Italian climate is conducive to the use of cotton, interfiber competition in Italy revolves largely around price, a factor in which rayon staple fiber products have had an advantage since early postwar years. The market surveys conducted by the Italian Committee for Cotton[17] have shown that consumers' preference for cotton is based on quality characteristics but that consumers will buy clothing and household textiles manufactured of blended fabrics because of lower prices. High-fashion items are not readily affected by price differentials between cotton and spun rayon goods, since consumer choice is based on considerations other than price.

It appears, however, that tradition-minded spinners continue to resist using the newer types of man-made fibers and to resist the manufacture of new types of blended fabrics, which may reflect the conservative attitude of their customers.

In general, cotton goods manufacturers now realize the importance of special finishes -- such as shrinkage control -- which have been introduced on basic cotton fabrics relatively recently in Italy. Cotton has gained wide acceptance in Italy's high-fashion circles, where silk was once supreme. Both "finishes" and "fashion" should contribute to strengthening cotton's position.

Cotton interests are aware of the necessity to increase the domestic demand for textile products. Although there is a general tendency to higher incomes, increases are channeled largely into consumer goods other than textiles. In periods of economic depression, textile consumption can be, and is, cutback probably disproportionately to reductions in income. The coefficient of demand elasticity has been computed at 0.83, the lowest among Common Market countries[18], but market surveys at the retail level have shown that increased consumption can be stimulated by promotion and advertising. A survey conducted by the Instituto

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[17] Comitato Italiano per il Cotone of the Instituto Cotoniero Italiano of Milan.

[18] *The Cotton Textile Industry in the European Economic Community*, Italian Cotton Institute, Milan, Italy, May 1957.

Centrale di Statistica in 1953 and 1954 indicated that while the expenditures of nonrural families for "textile products and similars" aggregated 12.7 percent, there was a great variation between the lowest and highest income groups in the proportion of the budget spent for such items. Nonrural families whose expenditures totalled less than $56.00 monthly, spent only 6.6 percent, contrasted with those in the highest expenditure bracket who spent 17.6 percent. Textiles are not particularly inexpensive in Italy. When the 6 percent import duty on raw cotton that existed prior to the adjustment of external rates is eliminated under the Common Market arrangements, raw cotton prices could be reduced about 1.7 cents per pound (based on prices prevailing in December 1960). It is possible that reduced cotton prices would be followed by cuts in rayon staple prices, since Italian man-made fiber producers have in the past found it necessary to reduce rayon staple prices when cotton prices sagged in order to maintain domestic sales. Such an adjustment in raw material costs could eventually bring down the retail price of textile products and thereby increase demand, particularly if this development is concurrent with cotton textile promotion, unless retail prices were raised to reflect other economic factors.

The Netherlands

Prior to World War II, textile consumption stood at over 17 pounds per person in the Netherlands, more than 2 pounds higher than the average of Western Europe. In 1950, tremendous quantities of textiles were imported from Belgium, presumably in anticipation of the end of rationing in December 1950 and as a result of demand stimulated by the war in Korea, and apparent consumption reached 24 pounds per capita. Since then, per capita consumption of textile fibers has risen to new levels and reached almost 25 pounds in 1956.

According to data compiled by the Central Bureau of Statistics in The Hague, the relationship of consumer expenditures for textiles to total consumer expenditures has decreased somewhat during the postwar period. It stood at 14.8 percent in 1948, at 14.4 percent in 1953, and at 14.0 percent in 1957. These ratios, however, are higher than in the prewar period, when the percentage stood at between 12 and 13 percent. The coefficient of income elasticity of demand for textile products has been computed at 1.05, both in the prewar and early postwar period.[19] No comparable data are available for later periods, but it is generally conceded that in the Netherlands there is a rather strong demand for textile products.

Cotton's share of this expanding domestic market remains below its prewar share of 71 percent, but has risen from the postwar low of 57 percent in 1955 to almost 59 percent in 1957. It is probable that data for later years will indicate even greater increases in cotton's relative share. There is a strong consumer preference for pure cotton goods, as seen by the high percentage of pure cotton yarns spun on the cotton spinning system -- totaling around 96 percent. Practically no cotton-rayon mixtures are made except on special order. In the Dutch market, rayon's share of total fiber consumption has ranged around 19.0 percent from 1952 to 1956 compared with about 7.5 percent in 1938. Data for 1957 shows a drop to 17.5 percent. Rayon and other man-made fibers are used to a relatively greater extent in the woolen spinning industry of the Netherlands than in any other country of Western Europe with the possible exception of Sweden. Since 1955, man-made fibers have constituted between 15 and 25 percent of all fibers put into process in the wool industry. In 1958, rayon and other man-made fibers put into process in the woolen industry totaled 11.9 million pounds, at least double the quantity used in the cotton spinning system.

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[19] *Textile Consumption and Distribution in the Netherlands,* Cotton Council International, Arnhem, Netherlands, May 1959.

The strong consumer preference for pure cotton goods has been enhanced by the improved finishing of cotton textiles and emphasis on cotton fashions. The growing ready-made clothing industry has probably made a major contribution to the lowering of clothing prices and maintaining consumers' interest in clothes in the Netherlands.

United Kingdom

Per capita consumption of all textile fabrics in 1938 stood at 26.2 pounds in the United Kingdom, the highest of any Western European country. Consumption reached a peak of 26.5 pounds per person in 1956, but contrary to the situation in other Western European countries, dropped below the prewar figure in 1957, when it sank to 25.8 pounds per person. Textiles' share of the total consumer expenditure pattern has been remarkably stable at around 9 percent, except in 1949 to 1951 -- a period influenced by the cessation of textile rationing and the effect of the Korean crisis. The coefficient of elasticity of demand for textiles has been estimated in the range of unity[20], that is, a 1 percent increase in consumer expenditures will result in approximately a 1 percent increase in expenditures for textiles.

The relative share of cotton to total fiber consumption dropped from 65 percent in 1938 to 49 percent in 1957. At the same time, man-made fibers -- which represented about 8 percent of total fiber consumption prior to the war -- increased to 18 percent by 1949 and reached over 30 percent of the total fibers consumed domestically by 1957.

Some of the impetus for the acceptance of man-made fibers occurred during the war, when the use of rayon as a substitute for cotton was officially encouraged, although there were no mandatory requirements to mix rayon staple with cotton in fabrics produced under the so-called utility scheme in effect at that time. Rayon staple fiber represents about 15 percent of the total fibers put into process in the wool sector of the British textile industry. These relatively high percentages indicate the widespread consumer acceptance of spun rayon yarns and mixed yarn fabrics of all types. Of the yarns manufactured on the cotton spinning system, spun rayon and mixed yarns have been as follows in the past few years:

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[20] Textile demand elasticity was computed at 1.02 for the year 1955 by the OEEC according to data published in *The Cotton Textile Industry in the European Economic Community,* Italian Cotton Institute, Milan, Italy, May 1957. Demand elasticity for clothing has been computed at 1.4 for the long-run and 1.0 for the short-run by Richard Stone and D. H. Rowe in *The Market Demand for Durable Goods.*

Year	Spun rayon yarns	Mixed yarns
	Percent	Percent
1957	12.0	4.6
1958	13.8	5.2
1959	14.3	5.3

It is significant that spun rayon yarns increased not only relatively but in quantity as well in 1958, despite the depressed conditions of the British cotton textile industry, which produced only 89 percent of the quantity of yarns manufactured the year before.

The general acceptance of spun rayon products by consumers is based upon their relative price and the well-advertised claims of the British producer of their "fitness for purpose". It is also clear that continued research in the fields of crimped and solution-dyed rayon staple, and surface characteristics, stability, and other physical properties have enabled rayon staple to broaden its range of end-uses and consumer acceptability. Blended yarns for knitted fabrics, and more recently for woven fabrics, have been particularly successful in the British market. Although there is no requirement for labeling the fiber content of textile products, intensive advertising campaigns for certain types of blended yarns have created widespread consumer demand.

Not only has rayon staple's use increased for clothing fabrics but demand is also growing in industrial fabrics and household items, particularly carpets, blankets, bedspreads, and bed ticking. It is possible, however, that the swing away from cotton may have reached its zenith and that interfiber competition in the future will be intensified between the cellulosic and noncellulosic fibers. A large vertically integrated retail chain, through whose stores about 8 percent of total purchases for textiles in the United Kingdom are made, capturing an ever-increasing proportion of the country's total volume in business shirts and standard types of knit underwear, reported that in 1954 almost equal quantities of cotton and spun rayon fabrics were made up by manufacturers on contract and sold by the retail chain. In 1957 more than 4-1/2 times as much cotton fabric was used as spun rayon. An important factor in the use of rayon fabric in the earlier year was its relatively low and stable price. The return to cotton in certain end-uses, particularly shirts, is being brought about by cotton's indisputable washing and wearing qualities, special finishes that have been produced in recent years, acceptance as a semi-luxurious fabric, and, presumably, by the improved price relationship of cotton to rayon goods.

While the United Kingdom as a market may be less influenced by price considerations than others, the relative prices of raw cotton and rayon staple fiber undoubtedly have important bearing on their choices by spinners and consumers. The decision early in 1959 by the Restrictive Practices Court that ruled out the yarn price-fixing agreement of the industry may have the long-range effect of bolstering the use of cotton products. Cotton yarn prices have since shown response to more normal market factors, as cotton yarn[21] prices dropped from an average of 63.2 cents per pound in 1958 to 53.6 cents per pound by May of 1959. Price cuts for spun rayon yarn followed cotton yarn declines and seemed to indicate that the cost of producing rayon staple in the United Kingdom left room for this kind of adjustment, and that price cuts were necessary for rayon staple products in order to ensure competitive strength in the face of lower cotton and cotton yarn prices.

Competitive Trends Since 1957

As explained earlier in this chapter, per capita data are not available after 1957, except on an annual basis for 1958. To follow the competitive situation of cotton in Western Europe since that time, one must turn to other statistical measures. For this purpose, fiber consumption in cotton spinning mills seems to give a good indication for lack of anything better. Of course, cotton mill consumption figures do not indicate consumption in the home market of a country without correction for export and import trade and without the addition of data for other textile fibers. They are, however, indicative of the trends within the cotton textile industry itself, which, after all, is one of the points where competition between the fibers occurs, especially with respect to rayon staple.

The cotton spinning industries of the countries of Western Europe consumed 4.6 billion pounds of all kinds of fibers in 1957, 4.2 billion in both 1958 and 1959, and an estimated 4.6 billion in 1960. This quantity was comprised of cotton, man-made staple, and other fibers in the following percentage distribution:

Year	Cotton	Man-made staple	Other Fibers
	Percent	Percent	Percent
1957	78.5	13.7	7.8
1958	79.5	14.4	6.1
1959	80.3	14.3	5.4
1960 (estimate, based on Jan. to June)	80.3	14.2	5.5

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[21] 36's ring beams.

Thus can be seen the slow but certain improvement in the competitive strength of cotton in the total fiber consumption pattern of cotton mills in Western Europe. The swing to cotton has been greatest in Austria, France, Spain, and Sweden. In each of these countries, cotton promotion programs have been in effect for several years. Cotton mills in all Western European countries except Denmark, Greece, Switzerland, the United Kingdom, and Yugoslavia used relatively more cotton in 1960 than in 1957. In practically every case, these increases bore out the trends that were already evident in 1958 and 1959.

In the Future

Two strong and basic trends seem to underlie the entire economic outlook for Western Europe. They lead to the belief that cotton will continue to be consumed in increasing quantities, especially if it is competitively priced. One of these is the higher levels of living that are almost universally being, and will probably continue to be, achieved. This factor alone is expected to result in increased demand for textile products, even though perhaps not in direct ratio to increases in disposable consumer incomes. The other, of course, is the expanded market for all products that will result from the population growth that is expected.

Although the economic climate for the expansion of cotton sales in Western Europe seems to be improving, the formation and functioning of the European Economic Community (Common Market) and the newer European Free Trade Association may come to have an important influence upon the volume and sources of cotton entering the countries within these trade blocs, for these blocs are composed of heavily industrialized nations.

At this time, there is little unanimity of opinion regarding the effect of these trade blocs upon the competitive relationship between cotton, on the one hand, and rayon staple and other man-made fibers on the other. This is undoubtedly due in part to the many questions yet remaining unanswered about the operation of these free trade arrangements. Some observers believe, however, that future changes in the relative strength of the fibers will not be attributable to the functioning of these trade blocs. Others can find elements in the arrangements that may work to the greater advantage of man-made fiber producers than of cotton interests. In view of the tendency of the man-made fiber industry of Western Europe toward cartelization, it may be that future inter-European trade in rayon staple will be little different in direction and volume from that existing today. Future inter-European trade in the newer noncellulosic man-made fibers and products, however, may increase in volume and scope, because they are not manufactured as widely as rayon filament and staple.

It is the hope and expectation of all efficient manufacturers on the European continent that the free trade areas will extend their markets and foster their sales. Assuming such increased economic activity, the free trade areas will probably work to cotton's favor. In possible contravention, however, is the continuation of the tendency to merge the identity of cotton users and man-made fiber producers and users which may make it more difficult in the future to separate cotton interests from those of other textile groups. One of many examples is the merger of the research facilities of the Shirley Institute and the British Rayon Research Institute in the United Kingdom.

It is likely that the per capita consumption of the major textile fibers -- cotton, wool, and man-made -- which has risen by about one-third over prewar levels, will continue to rise. It is important that cotton's share also continues to increase. If cotton's position in Western Europe is kept strong, cotton should be able to sustain the gains already achieved and to further recover the ground lost since 1938 within the total fiber consumption pattern. It would appear that three forces are of particular importance in achieving this objective -- cotton prices that are attractive in relation to rayon staple, continued promotion of cotton in the full range of end-uses in all national markets, and continued research at all levels of the industry, from plant breeder to the ultimate consumer. If these conditions prevail, there is little doubt that cotton can continue to make gains in Western Europe, even in the face of the economic and national and international political importance of the man-made fiber industries.

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